JUNE 30, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

SECOND HALF: WHICH WAY?

SALES

Look for gradual uptrend: A 4.4 per cent gain over first half

PROFITS

Squeeze will tighten. Anticipate an 8.6 per cent drop from 1957's last half

COSTS

Prepare for a 1.4 per cent rise in unit cost of manufacturing as wages outrun productivity

SELLING PRICES

Tough competition will hold them steady—with some notable exceptions

EXPANSION

Re-equipment will help metalworking boost capacity 1.7 per cent

● For full details on what plant managers expect, See Page 49

it's mainly a matter of TIMING!

The net cost of replacing a machine depends on WHEN you do it

THERE'S A TIME to buy and a time to sell. A time to invest and a time to "sit tight." And a time when you *should* replace an old machine with a new one.

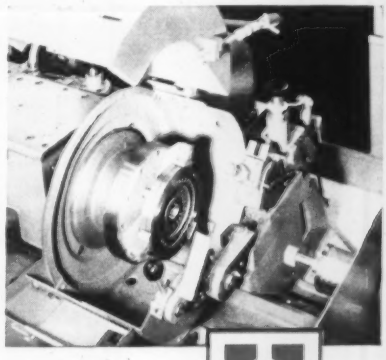
Actually, timing is the most important factor in any replacement program. For there is one precisely predictable time when the replacement of any machine will work out to your best advantage—productionwise and investmentwise. Too soon is just as bad as too late. Either way you *lose money!*

Unless you can afford a loss—and it could be substantial—don't trust intuition or rule-of-thumb computations to determine when a machine should be replaced. There are many variables involved, but they can all be expressed in dollars and cents. And correct timing then becomes a matter of simple arithmetic.

Our sales engineers are well experienced in making obsolescence studies and determining the proper replacement timing. If you'd like some expert assistance in planning your replacement program—or want to confirm your own calculations on a particular machine, just call in your Heald engineer. He will be glad to make a replacement analysis, without obligation of course. Similar studies by Heald engineers have pointed the way to many important savings.

For Example: A large machinery manufacturer was using an old Model 72A Heald Internal to grind the bore and adjacent face of steel countershaft gears. A cost analysis revealed that by replacing this with a new Model 271 Size-Matic, substantial savings could be made. The new machine, shown at the right, was installed with the following results.

	ANNUAL COSTS	
	Old Machine	New Machine
Direct Labor	$13,299.00	$ 5,079.00
Power Consumption	427.00	182.00
Property Taxes & Insurance	45.00	552.00
Normal Maintenance	841.00	500.00
Restorative Repairs, Old Mach.	4,066.00	....
Capital Investment, New Mach.	....	6,256.00
Total Cost Per Year	$18,678.00	$12,569.00
Annual Saving, New Machine		$ 6,109.00



YOU pay for obsolescence. Replacement pays for itself!

THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

HEALD

NO. 5
495 YDS. PAR 5

Zinc coating holds tight on sheets drawn 4½ in. deep

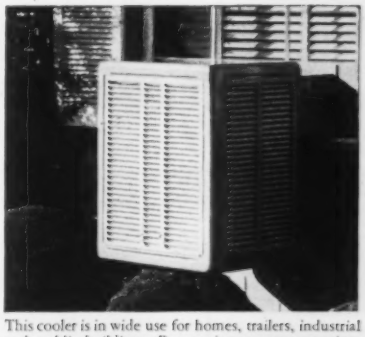
Here you see a part of the housing of a room air-cooler. The cooler is of the evaporative type, and the ever-present moisture makes rust a continual threat. For this reason the manufacturer decided to make the housings of rust-resisting galvanized sheet steel, with an enamel finish baked on. But the whole idea depended on the ability of galvanized steel to be deep-drawn without faulting the zinc coating.

RIGHT DUCTILITY AND STIFFNESS

A trial showed that Bethcon galvanized sheets would successfully take the draws, some of which were 4½ in. at one blow. The reason for this success lies in the fact that Bethcon is galvanized by our unique continuous process, a process which does two wonderful things to a Bethcon sheet:

1. It bonds the zinc so tightly to the sheet that the zinc won't flake off even in severe forming operations.
2. It imparts to the sheet an ideal blending of ductility and stiffness, so that deep-draws can be made without sacrificing rigidity in the product.

Industry is discovering all sorts of interesting ways in which Bethcon continuously galvanized sheets can help make products better, more economically. Where you need the strength of steel, coated for corrosion-resistance, you're likely to find Bethcon a new answer to your problem. Why not discuss it with a Bethlehem representative?



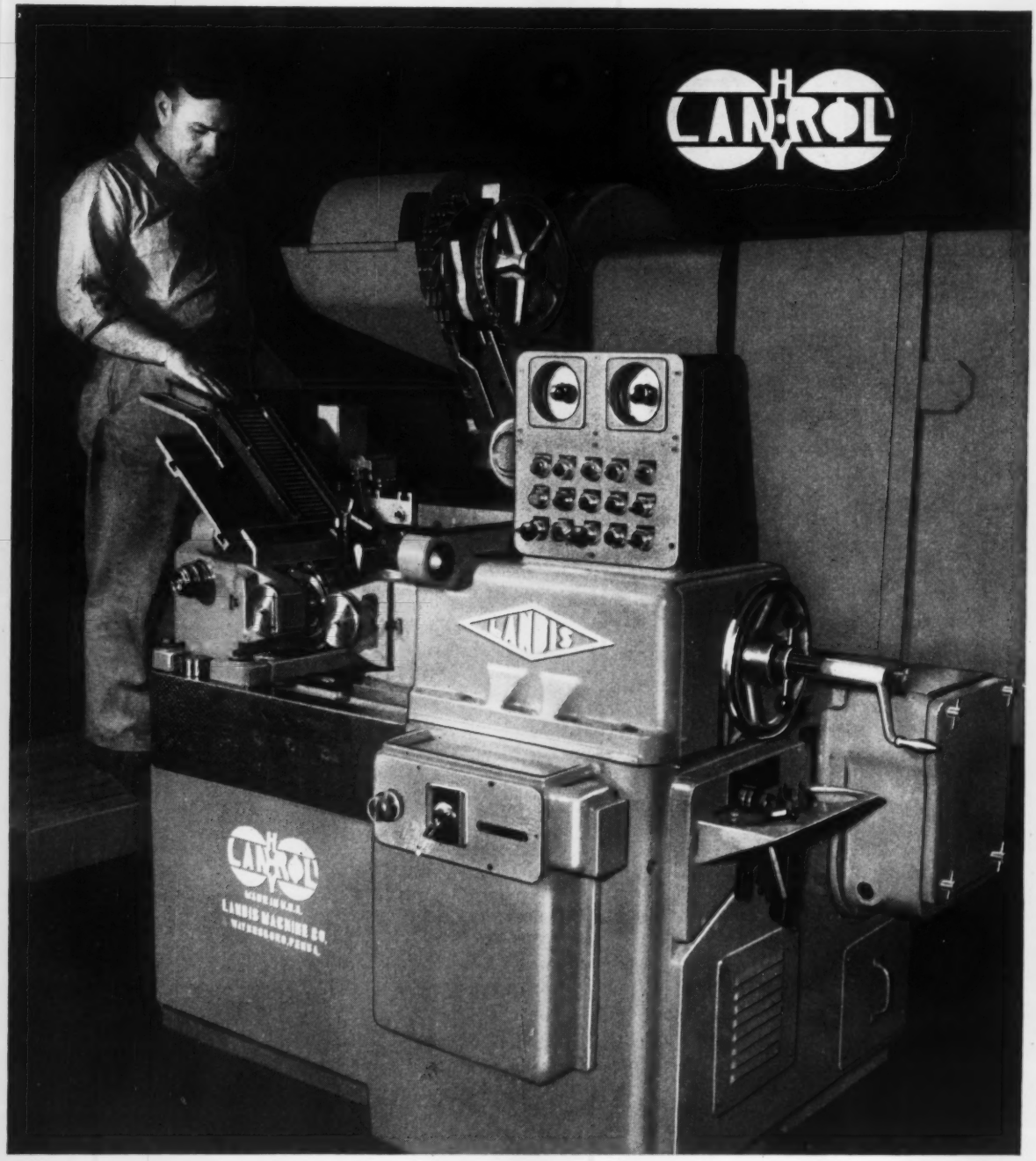
This cooler is in wide use for homes, trailers, industrial and public buildings. For maximum rust-protection, unit is cased in Bethcon galvanized sheet steel, primed with zinc-chromate and finished in baked enamel.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



512

264 threads per minute

(132 double-end studs)—Both Threads Rolled to a Class 3 fit by the Lanhyrol Machine in a Single Threading Cycle . . . at Columbus Bolt and Forging Co. (Columbus, O.)

Blanks were of AISI 1335 and 1041 Steel (210-220 Brinnel) . . . Cold-Drawn and Extruded . . . not spheroidized or annealed and more than 350,000 Parts Per Die Set were threaded . . . over 3½ times the die life realized from previous thread rolling methods. Current LANDIS Research indicates increases to 320 threads (160 studs) per minute with an even greater roll life.

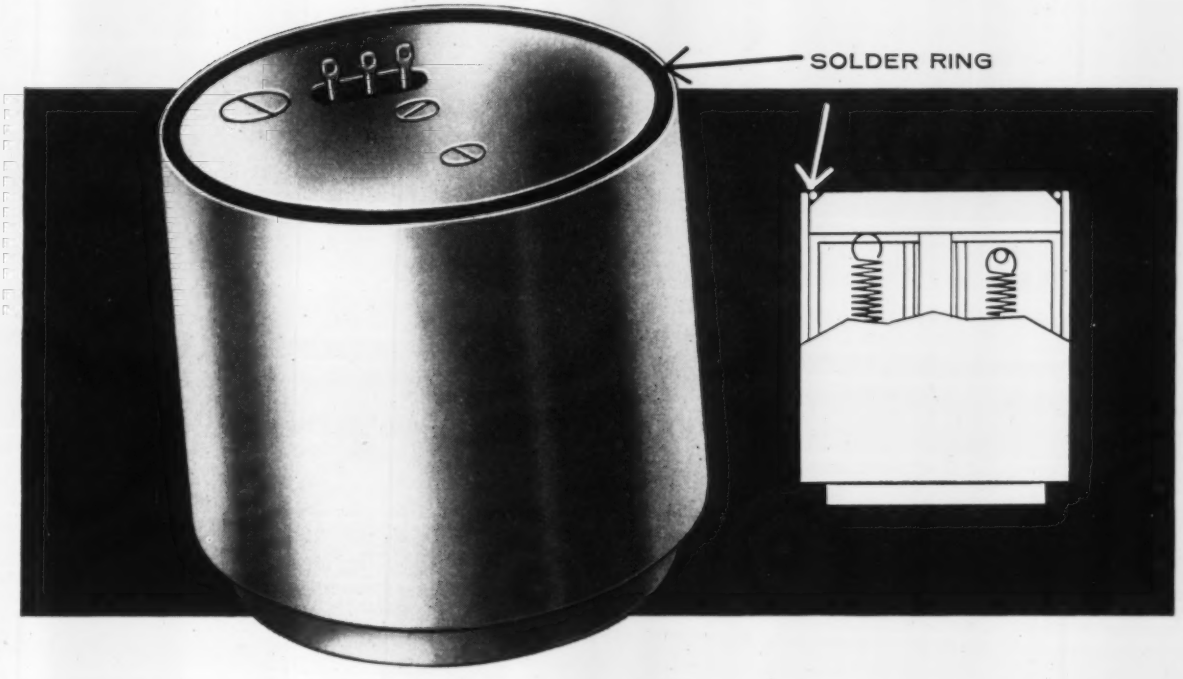
Larger and Longer Sizes, Both Single and Double-End Studs, Can Be Rolled . . . hopper feeding and orienting devices available for automated operations.

LANDIS *Machine* COMPANY

WAYNESBORO • PENNSYLVANIA

Precision soldering 7 Times Faster...

with TOCCO* *Induction Heating*



When G. M. Giannini and Co., Inc., Pasadena, California, switched from old-fashioned methods to TOCCO Induction Heating they increased production of these high-precision accelerometers from 4 to 30 per hour—with a commensurate *decrease* in production costs.

Here's what a Giannini official has to say about the TOCCO installation: "Prior to using TOCCO for this purpose, we had tried soldering irons, normal torches, resistance sealing, and even threaded screw fittings, with uniformly poor results. Essentially, the TOCCO unit has permitted us to build, in production quantities, oil-filled hermetically sealed units that could not be produced in any other way."

Whether your production bottleneck involves soldering, brazing, heat treating or heating for forming it pays you to investigate TOCCO as an economical way to do it better, faster and at lower cost.

THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today— NEW FREE Bulletin

The Ohio Crankshaft Co. • Dept. S-6, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Brazing and Soldering".

Name_____

Position_____

Company_____

Address_____

City_____ **Zone**____ **State**_____

THE

A B C

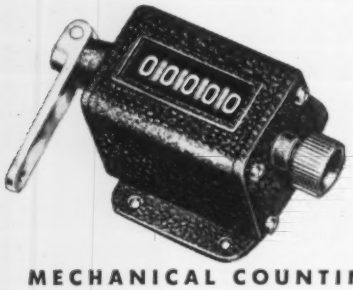
OF

1 2 3

Why is COUNTROL

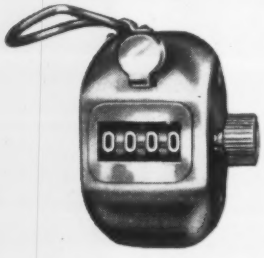
important in every business today?

Countless times a day, every business needs to know "how many? . . . how much? . . . how far? . . ." and many other questions that can be answered only by facts-in-figures. But how to get these figures . . . from so many different machines, processes, operations and systems? Veeder-Root Counters are doing it every day, by means of:



MECHANICAL COUNTING

Small Resets count strokes, turns, or pieces . . . are used by thousands for moderate duty in parts inspection, quality control, conveyors, machine tools, light presses, etc.



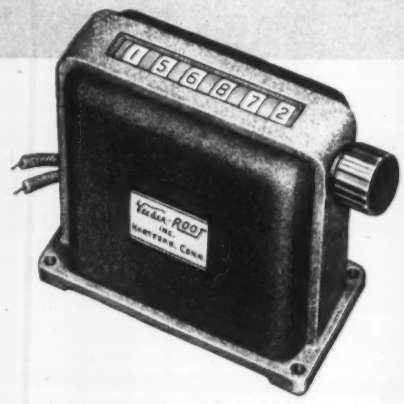
HAND COUNTING

Where objects or units cannot be counted electrically or mechanically, hand-operated counters like this Hand Tally do the job. For instance, quick spot checks of production or performance, traffic count, inventory, etc. Fits palm of hand, counts one for each pressure of thumb lever, resets to zero by turning knob.

Insist on Standard

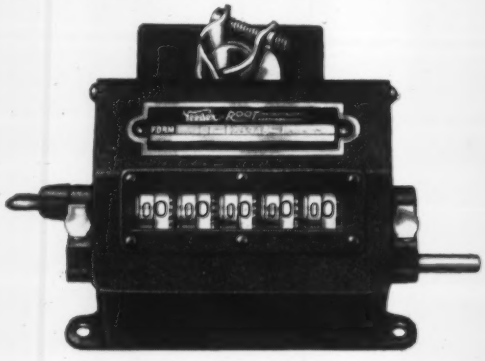
VEEDER-ROOT COUNTERS

from your Industrial Supply Distributor



ELECTRICAL COUNTING

These remote-indicating counters bring your production machines as close as your office wall. AC or DC, they can be connected in series with any simple switch, and will transmit production figures *instantly* over any distance. May be panel-mounted in groups.



CONTROLLING

Set it for the exact number of turns, pieces, or operations required . . . and this Predetermining Counter will control the run *exactly* . . . preventing over-runs and shortages. When the predetermined number is reached, counter will light a light, ring a bell, or actuate a stop-motion.

IN SUM: *If it can be counted or controlled . . . count on Veeder-Root to do it. Get in touch with your Industrial Supply Distributor for standard counters for application to your production machines and processes. And get in touch with Veeder-Root for counters to be built into original equipment.* **Veeder-Root Inc., Hartford 2, Connecticut.**

This Week in STEEL The Metalworking Weekly

June 30, 1958
Vol. 142 No. 26

EDITORIAL 47

Communism's political and economic objectives are deadly serious. They need to be watched more closely.

SPECIAL FEATURE 49

This happy fellow read STEEL's midyear forecast before it was set in type. He knows that metalworking dollar sales are expected to rise 4.4 per cent in the last half. STEEL learned that and other important data from questioning 5000 plant managers.

WINDOWS OF WASHINGTON 56

There's still much legislation important to metalworking that Congress must handle.

MIRRORS OF MOTORDOM 63

GM orders tooling for air-cooled aluminum engine. AMC and Willys already have such powerplants.

THE BUSINESS TREND 67

Production index equals 1958's high point for second week, may level off in vacation period.

WHERE TO FIND—

Behind the Scenes 6
Letters to the Editors 10
Editorial & Business Staffs .. 16
Calendar of Meetings 23
Men of Industry 71
New Products 103
New Literature 116
Advertising Index 149

Business—

METALWORKING OUTLOOK 43

The Second Half: Which Way? STEEL's midyear forecast 49
Sales: Respondents predict 4.4 per cent increase
Profits: Indications are the squeeze will pinch more

Republic Starts Up New Bar Mill at South Chicago, Ill. 53

J&L Operating New Pipe Mill at Aliquippa, Pa. 53

STEEL Goes to Russia—Soviet won't catch up for years 54

Cost of Rubber Parts Cut—Automated molding responsible .. 59

Stalemated? Try This Move—Operations research proves itself .. 60

Shearing Line Cuts Raw Material Costs—It's at Canco plant 76

Production—

TECHNICAL OUTLOOK 79

Machine Doubles Up on Grinding—Cost crisis story 80

Solutions to Special Handling Problems—Seven cures cited 82

Rotary Surface Grinding Goes Automatic—It's new approach.. 84

Harder Stainless Practical—Nitriding method simple, fast 85

Progress in Steelmaking—Platform Cuts Ladle Relining Costs .. 88

Infrared Degreases License Plates—Costs cut 85 per cent 91

Machine Topics—Coated Abrasives Advance 92

Presses Speed Assembly—Eliminate rework and scrap 96

Abrasive Solves Finishing Problem—Metal powder development.. 98

Markets—

MARKET OUTLOOK 119

Complete Index to Market News and Prices 119

Galvanized Sheets Recover—Pickup steady since April 121

Pig Iron Output Gains—AISI report for May 147

Steelwork Operation Chart and District Ingot Rates 128

Sagging Steel Rate Stalls Scrap 140

Nonferrous Metals—Plateau Quarter Coming Up 144

Slag Demand Heavy in '57—Bureau of Mines report 148

STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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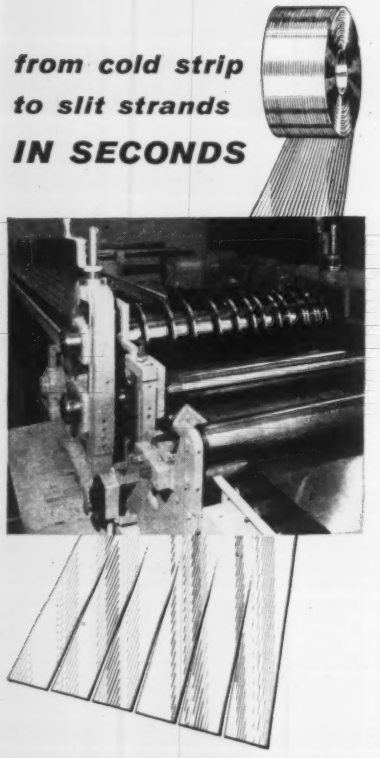
from cold strip
to slit strands
IN SECONDS



YODER ROTARY MULTIPLE SLITTERS

A Yoder slitter converts mill-width coils of flat-rolled metal into many variable-width strands in amazingly short time. Speed, coupled with great accuracy and low manpower requirements, makes a Yoder slitter an important factor in keeping production and overhead costs down.

Operated by only two men, the Yoder Type 3-48 slitter illustrated is designed to accommodate standard mill-width coils up to 48 inches wide, in a variety of metals and thicknesses. The slit strand widths can be held to within a .004" tolerance.

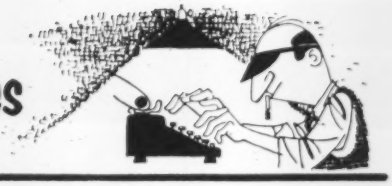
Even if your steel requirements are as little as 100 tons a month, the savings to be realized in time, manpower and raw material costs alone will pay for a Yoder slitter in the first few months of operation.

There is a Yoder slitter designed and engineered to meet your requirements, and to speed the delivery of "special" width stock in a wide range of large or small sizes. Send for your free copy of the fully-illustrated, 76-page booklet, "Multiple Rotary Slitting Lines."

THE YODER COMPANY
5502 Walworth Avenue • Cleveland 2, Ohio

ENGINEERING **YODER** MANUFACTURING
ROTARY SLITTING LINES

behind the scenes



Sentimental Note

David E. Neustadt, vice president and marketing director of the National Metal Abrasive Co., Cleveland, kindly sent us a copy of the following composition. Like so many other inspiring contributions to the world of letters, it was written by the notable and indefatigable A. Nonymous. We took the liberty of assuming that it would brighten your day, so we caused it to be set in 8 point Cornell bold face, 22 picas wide, and published this 30th day of June in the interest of all who delight in larks, bluebirds, and rainbows—and in the conviction that youth is where you find it.

YOUTH

YOUTH . . . is not a time of life; it is a state of mind. It is not a matter of ripe cheeks, red lips, and supple knees; it is a temper of the will, a quality of the imagination, a vigor of the emotions; it is a freshness of the deep springs of life. Youth means a temperamental predominance of courage over timidity, of the appetite for adventure over love of ease. This often exists in a man of 50 or 60 more than in a boy of 20.

NOBODY grows old by merely living a number of years; people grow old only by deserting their ideals. Years wrinkle the skin, but to give up enthusiasm wrinkles the soul. Worry, doubt, self-distrust, fear, and despair—these are the long, long years that bow the head and turn the growing spirit back to dust.

WHETHER 70 or 16, there is in every being's heart the love of wonder, the sweet amazement at the stars, and the starlike things and thoughts, the undaunted challenge of events, the unfailing child-like appetite for what next, and the joy and the game of life.

YOU are as young as your faith, as old as your doubt: As young as your self-confidence, as old as your fear: As young as your hope, as old as your despair. In the central place of your heart there is a wireless station; as long as it receives messages of beauty, hope, cheer, courage, grandeur, and power from the earth, from men and from the Infinite, so long are you young.

WHEN the wires are all down and the central place in your heart is covered with the snows of pessimism and the ice of cynicism, then you are grown old indeed, and may God have mercy on your soul.

Looking Ahead

This week's issue contains STEEL's famous Midyear Forecast, or a peek into the next six months of metalworking. Forecasting, of course, is an art that many of us think came about with the advent of man. Entomologists solemnly assure us that some insects had been engaged in the forecasting business long before men were even in evidence, but they did it with their fur coats; the caterpillars, we mean. (Incidentally, the only way we can differentiate between entomologists and etymologists is to associate the first with ents, which are small social insects, and the second with et—one who et the dictionary.)

STEEL's forecasting is based on something more substantial than a fur coat. (No, thanks; we're not going to be lured into any comment about vicuna coats, either). Assistant Editor George Howick sent 5000 questionnaires to a cross section of metalworking management, and the returns were rendered down by a task-force of men, women, and IBM machines.

Fern Wilson, one of the guiding spirits in the analysis of all those readers' opinions, revealed two significant ex cathedra remarks among the returns. "One man," said Fern, "wrote that things are in a mess because we have all grown too soft. Another man explained that business has gone to hell because the do-it-yourself craze has destroyed too many of our markets."

In any event, clip this forecast. It may serve to guide you through the economic shoals between now and a Happy New Year.

Shrdlu

(Metalworking Outlook—Page 51)

At Mackenzie Muffler, *workman is fabricating oval muffler shells from Youngstown Cold-Rolled Steel Sheets*

Accent on Excellence

Youngstown cold-rolled sheets

Quieting today's 300-horsepower automobile engines to a barely audible whisper, are efficient mufflers made by Mackenzie Muffler Company of Youngstown, Ohio, that provide long-lasting service while undergoing the severest of climatic and operating conditions.

Mackenzie Mufflers, fabricated from shells of Youngstown Cold-Rolled Steel and internal components of Youngstown mechanical tubing, are found quietly at work under the flashy empennage of today's finest automobiles.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

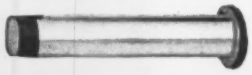
"Full-round" design of Link-Belt LXS chain avoids stress raisers

ROLLERS are accurately machined for correct operating clearances and free-rolling action.

SIDEBARS of selected steel have accurately machined "full-round" pitch holes, which maintain firm, tight press fit of pins and bushings.

FOR POWER TRANSMISSION, LXS chain is generally supplied with offset sidebars. Uniform stress distribution provides extra chain life and safe dependable operation.

FOR CONVEYING AND ELEVATING, LXS chain with straight sidebars and rollers to meet varied operating conditions. A wide variety of attachments is available.



"FULL-ROUND" PINS are made from a tough steel, specially treated for high strength in shear . . . sized for controlled press fit to prevent rotation in sidebars.

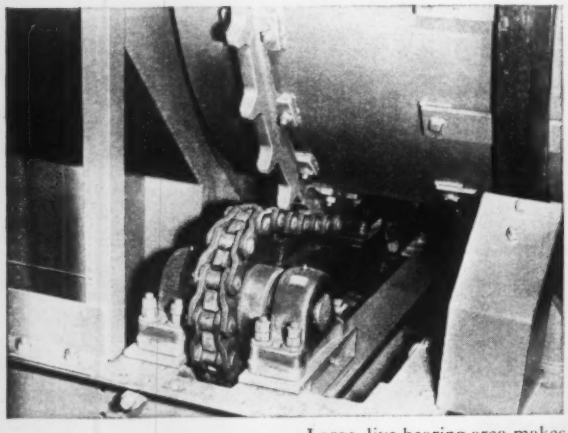
"FULL-ROUND" BUSHINGS are properly hardened to shrug off shock, resist wear . . . accurately sized for controlled press fit to prevent rotation in sidebars.

Greater live bearing area extends life

Stress concentration points are eliminated in Link-Belt LXS chain! "Full-round" design avoids sharp corners which may be the starting points of chain failure . . . provides maximum live bearing area between pin, bushing and sidebars. As a result, stress is distributed evenly . . . long chain life is assured under severe conditions.

Pins and bushings of LXS chain are accurately sized . . . assuring controlled press fits, preventing rotation in sidebars. Similar accuracy in machining of sidebars permits close control of pitch and proper chain length after assembly.

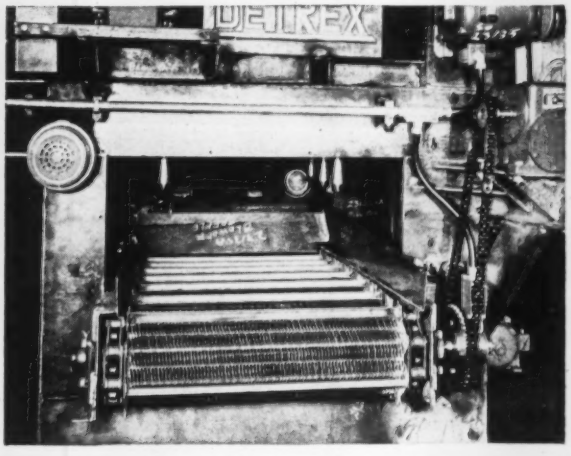
Other long-life features of Link-Belt LXS chain include use of selected steels and controlled hardening of all parts. Both contribute to greater endurance . . . greater uniformity.



LXS drives stand up to impact and abrasive service

Large, live bearing area makes LXS chain ideal for exposed drives and abrasive conditions such as found on this heavy rotating drum. Uniform distribution of load over ample bearing area reduces cutting action of abrasives . . . extends chain life.

LXS chain has stamina required for long, heavy-duty conveyors



With its exceptional strength and wear resistance, Link-Belt LXS chain can easily meet rugged conveying and elevating requirements. Due to accuracy of pitch and attachment spacing, plus close matching of multiple strands, LXS has the added strength and wear life necessary for the extra-long conveyors so important to today's highly mechanized industry.

HEADQUARTERS for chains, sprockets and other Link-Belt products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor. Refer to the Yellow Pages of your local Phone Directory.

LINK-BELT

14,740

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

GUARANTEED PURITY!

Argon of 99.995% minimum purity Guaranteed by LINDE!

The inert argon welding gas you get from LINDE is now *guaranteed** to contain *less than 50 parts per million* of impurities. And it's LINDE's regular industrial argon—not a special, extra-cost grade. You get this extremely high purity *on delivery* to you, regardless of the way the argon is delivered.

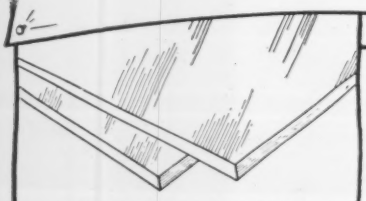
LINDE's 50 years of experience in producing gases of extremely high purity make this assurance possible. You can depend on LINDE *consistently* for the highest possible purity in the gases you use. LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. Offices in other principal cities. *In Canada:* Linde Company, Division of Union Carbide Canada Limited.

*LINDE argon delivered as a liquid is the purest inert gas on earth. Guaranteed to contain less than 50 parts per million of impurities, LINDE liquid argon contains, on the average, less than ½ of this amount and practically no moisture.

For Argon of guaranteed highest purity . . . call LINDE!

The terms "Linde" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

PLUS ITEMS
from your Whitehead Metals "Supermarkets"



TOOL AND JIG PLATES

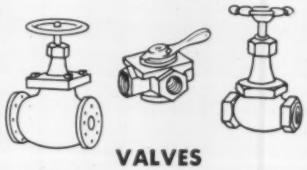
Of Alcoa Aluminum, they are stress relieved, non-porous, corrosion-resistant, easily machined. Available in standard size (48" X 96") in 13 thicknesses; or cut to your specifications. Folder available.

WELDING ROD

One-stop service for all you need in Aluminum, Copper Alloys, Nickel Alloys and all major types of welding rod and wire. A full line of soft solders and silver brazing alloys, too. Technical service and complete literature on request.

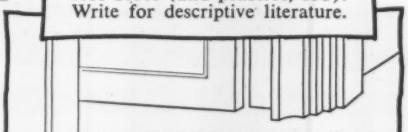
FOUNDRY ALLOYS

Over 100 different types—largest selection in the industry—available in handfuls or carloads off-the-shelf. Technical service, too. Write for "Foundry Alloy" Bulletin FA1.



VALVES

All major types are available from stock in Aluminum, Inconel, Monel, Nickel and Stainless Steel (and plastics, too). Write for descriptive literature.



ARCHITECTURAL SHAPES

Copings, gravel stops and door saddles are just a few of more than two hundred Alcoa aluminum shapes available off the shelf, and illustrated in booklet titled "Shapes." Monel, Stainless and Copper roofing items complete the Whitehead line of architectural materials on hand.

These "Plus Items" and many more are available in addition to a wide selection of corrosion-resistant sheet, rod and tube.

All told, there are more than 20,000 items distributed and serviced by Whitehead. All are available, off-the-shelf, from the nine Whitehead Metal "Supermarkets." All are the products of such leading producers as Alcoa, Anaconda, Inco & Crucible Steel to name just a few.

When you call Whitehead you get fast service, and frank, unbiased help in selection. Technical service when you need it. Add it up and you'll find it pays to

Call **WHITEHEAD**
METAL PRODUCTS COMPANY, INC.
First!

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LETTERS
TO THE EDITORS

Editorial to Legislators

I am interested in your editorials, particularly the one of June 2, "Modernization: We Need a Tax Break" (Page 33). I sent copies to our representative, Hon. Robert B. Chiperfield, and to one of our senators, Hon. Everett McKinley Dirksen. I hope something will be done about federal taxes at this session of Congress.

As a taxpayer, it is difficult to reason out that it is good business to pay tremendous income taxes—a large portion of which goes to foreign countries who use the money to finance their industries, such as is being done in Western Europe. Those countries thus benefited then sell their products in this country at a lower price than we can produce.

The ultimate result will be that we, as a nation of manufacturing, will go out of business because the workers in foreign industry work for possibly 60 cents an hour, or thereabouts, and workers in this country get well over $2 an hour. It is easy to see that we cannot compete with such low-priced labor.

C. R. Rosborough
President
Moline Tool Co.
Moline, Ill.

Rush 'Pricing for Profit'

PLEASE RUSH ME 120 REPRINTS OF THE PROGRAM FOR MANAGEMENT ARTICLE, "PRICING FOR PROFIT," FROM YOUR JUNE 16 ISSUE.

J. C. Sears
Executive Secretary
American Gear Manufacturers Association
Washington

• • •

Please send three copies of this article. It is an outstanding piece of work.

Frederick I. Hausman
President
Hausman Steel Co.
Toledo, Ohio

Lauds Depreciation Drive

We are in accord with your contention that a program to correct outdated depreciation laws is necessary. We also agree that many industrialists will not replace capital equipment until it has been fully depreciated for tax purposes. However, in this era of inflation, man-

(Please turn to Page 12)

WIN YOUR CHOICE IN NEW PANGBORN CONTEST

Celebrating the successful introduction of new

Pangborn

Rotoblast® Steel Shot

FOLLOW THESE SIMPLE RULES:

1. Anyone employed by a company using blast cleaning equipment is eligible for this contest, except employees of Pangborn Corporation, its agencies or affiliates.
2. **Check Rotoblast Steel Shot ad in this issue for answers and fill in missing words on the Official Entry Blank.**
3. Sign your entry and mail to Pangborn Corporation, Hagerstown, Md. **Entries must be postmarked not later than the 4th of July, 1958.**
4. All entries with correct answers will be deposited in a container from which the lucky winner will be drawn and awarded his choice of Ford Thunderbird, Chevrolet Corvette or Plymouth Fury.

OFFICIAL ENTRY BLANK

PANGBORN CORPORATION, Hagerstown 7, Maryland

In new ROTOBLAST STEEL SHOT, voids and defects are virtually eliminated by a new shot manufacturing process called _____ Casting.

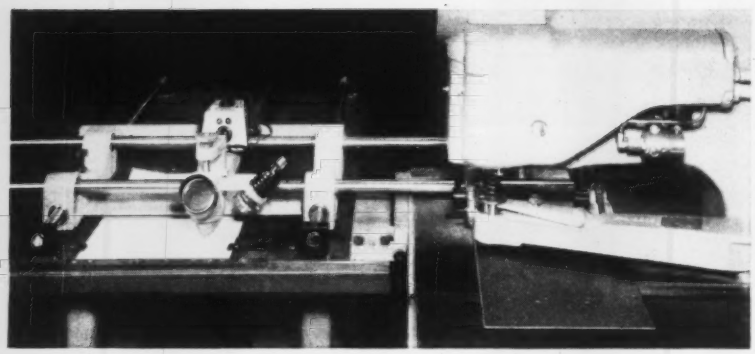
Continuous heat treating in a controlled atmosphere gives you _____ hardness and _____ life. Result: faster cleaning and lowest blast cleaning costs ever.

Name..... Title.....

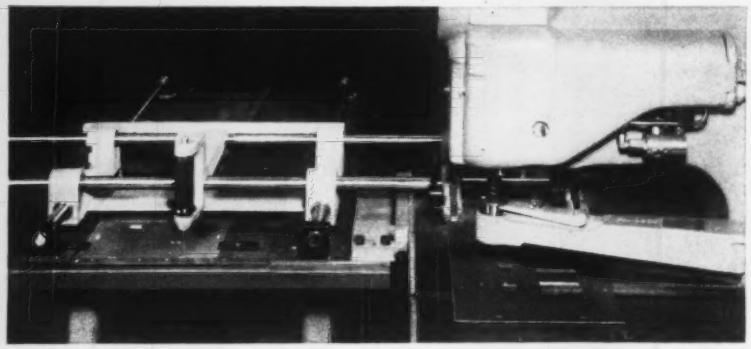
Company.....

Address.....

City..... Zone..... State.....



shortest distance
between blueprint and product



The DUPL-O-SCOPE

Firms punching or notching sheets up to ¼" mild steel in medium runs know how profitable it is with a Strippit Fabricator-Duplicator. Now, it's even faster with the new Dupl-O-Scope, which eliminates the template drilling and layout step!

Readily mounted in the Duplicator stylus bracket, this precision optical pickup device quickly translates a drawing, layout or printed circuit sample into a punched metal template — ready for rapid-fire punching and notching on the Fabricator-Duplicator using standard interchangeable tools or "specials" made up to your requirements.

Write today for catalog and an actual demonstration on *your* work at *your* plant by a Strippit Mobile Unit. Warehouse stocks at Chicago and Los Angeles.

The versatile Strippit Fabricator, one-machine shop for quick-change punching, notching and nibbling — available with positive Duplicator for high-speed production punching and notching in complex patterns including printed circuit boards.

WALES
STRIPPIT
Company
210 Buell Road, Akron, New York
In Canada: Strippit Tool & Machine Limited, Brampton, Ontario

LETTERS

(Concluded from Page 10)

agement is liable to postpone replacement, even of a fully depreciated item, because the depreciation reserve is a fraction of the cost of the replacement.

The answer, to our way of thinking, is not the temporary measure you suggest. In most cases, facilities which would be amortized under five-year amortization are not outmoded or obsolete. Management will not replace fully amortized equipment if it is not outmoded—it is not economically warranted. After an additional five-year period, the amortized equipment probably should be replaced, but, during the ten-year period, inflation has increased the cost of replacement so it is again out of line with the reserve.

The recent changes in depreciation tax allowances to allow double-declining balance and sum-of-the-digits provisions has corrected the former incongruity of the curve of growth of the depreciation reserve. The remaining necessary change is a recognition, for tax purposes, of economic depreciation.

The dollars needed to replace fixed assets must be provided. They cannot be provided if they are paid as taxes or distributed as dividends. Our goal must be to educate management and the administration and Congress to this need.

C. A. Peters
Controller
A. Finkl & Sons Co.
Chicago

Report Is Encouraging

Your report on photography and camera equipment, "Photography Does Many Jobs" (Apr. 14, Page 88), is encouraging. I would like more information on the firms that make cameras to specifications. This list can be useful.

H. M. Liftman
Mechanical & Camera Devices
Allen B. DuMont Laboratories Inc.
Clifton, N. J.

• *We suggest you contact Vectron Inc., 1599 Trapelo Rd., Waltham, Mass.*

Query on Tool Leasing

We read with interest the item, "Leasing Gains," in your Metalworking Outlook in the June 2 issue (Page 29). We would appreciate getting information on firms to contact for details of leasing machine tools.

Philip Adams
Adams Co.
Dubuque, Iowa

• *Most major tool companies offer leasing programs, either their own or in cooperation with leasing firms. We would suggest you contact any of the firms whose equipment interests you.*

Some machine tool builders are more interested in the leasing technique than others. Among those are Kearney & Trecker Corp., Milwaukee; DoAll Co., Des Plaines, Ill.; and Verson Allsteel Press Co., Chicago. Among the leading specialists are Walter E. Heller & Co. and Nationwide Leasing Co., both of Chicago.

You have never used abrasive like this new

ROTOBLAST® STEEL SHOT

1 Vacuum Casting

Electric furnace alloy steel, shotted in revolutionary new vacuum chamber for greater density, eliminating the voids and defects encountered in conventional steel shot. Gives you a fatigue resisting shot of much longer wear life.

2 Continuous Heat Treating in Controlled Atmosphere

Nothing like it in the industry. Uniform heating of every particle, in zero oxygen atmosphere. For the first time . . . ball bearing heat treating quality in a tonnage product . . . gives you uniform hardness and longer life.

New Rotoblast Steel Shot gives you much faster cleaning and the lowest blast cleaning cost ever!

Schedule an early test! Talk to the Pangborn Engineer in your area or write PANGBORN CORP., 1600 Pangborn Blvd., Hagerstown, Md.

Pangborn

Rotoblast Steel Shot

Machine It

Extrude It

Form It

ALUMINUM...*Design-able*

"Aluminum is one of the most design-able of metals." So says the aluminum industry, naturally—but more and more product engineers and designers are adding their "amen" every year, by designing in aluminum.

Reason for aluminum's design flexibility is its *workability*. From a production standpoint, you can do more with this lightweight, strong, rustfree metal than any other commonly-used material, and production is often more efficient with aluminum.

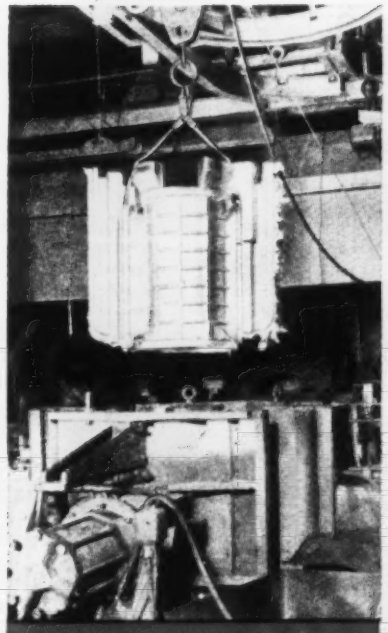
You can machine aluminum: Most aluminum alloys are known for their inherently good machinability. They cut easily at high speeds, saving time. They require less machine energy, saving power. They conduct heat away from the tool point rapidly, saving tool wear.

You can extrude aluminum: Aluminum can be squeezed through extruding dies to produce tailored shapes of almost unlimited variety. An extrusion, besides giving you wide design latitude, can often eliminate extra operations such as joining, machining, reinforcing or crimping. One extrusion often can replace several separate parts.

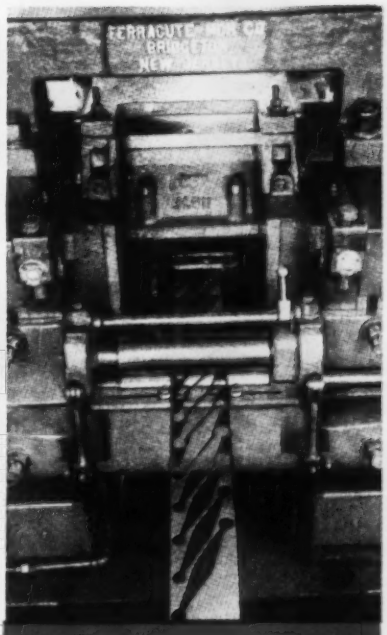
You can draw and form aluminum: Lightweight, ductile aluminum alloys are ideal for drawing and forming operations of all kinds. They'll draw and form easily, on standard equipment—and often require less power.

You can cast aluminum: Aluminum can be easily cast by all three methods: sand, permanent mold and pressure die casting. It can be cast in thinner sections than most materials,

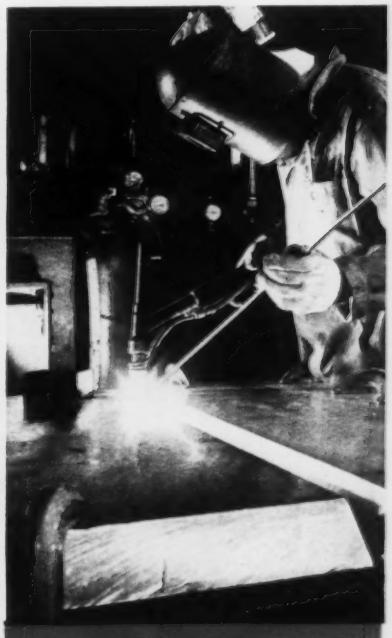
REYNOLDS



Cast It



Draw and Stamp It



Weld It

because it's workable

and produces a casting which requires much less (if any) machining or finishing treatment. Aluminum castings usually cost less than ferrous castings, when you consider finishing costs, handling costs, and metal costs.

You can stamp aluminum: Aluminum can be used to efficiently produce stampings, punchings or blanks . . . and tools last longer when stamping aluminum. It's lightweight and easy to handle, often needs less finishing.

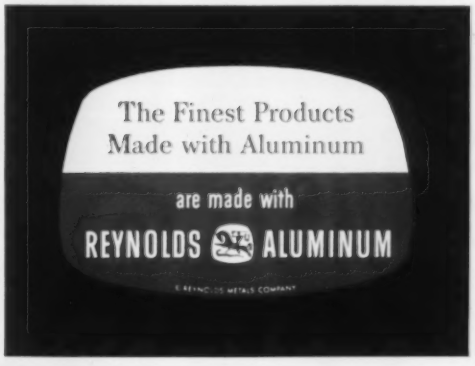
You can weld aluminum: Any of the common joining methods—welding, brazing, riveting, even soldering—are practical with aluminum. In addition to the popular inert gas arc weldings, all other common welding methods can be used with aluminum.

Take advantage of the versatility, the workability of aluminum. It's one metal that can improve products, and cut production costs, too. For full information on the potentials and characteristics of the various aluminum alloys—or for technical assistance—contact Reynolds Design and Engineering Services through your local Reynolds office.

Reynolds Metals Company, P.O. Box 2346-JL, Richmond 18, Virginia.

ALUMINUM

Watch Reynolds All-Family Television Program, "DISNEYLAND", ABC-TV.



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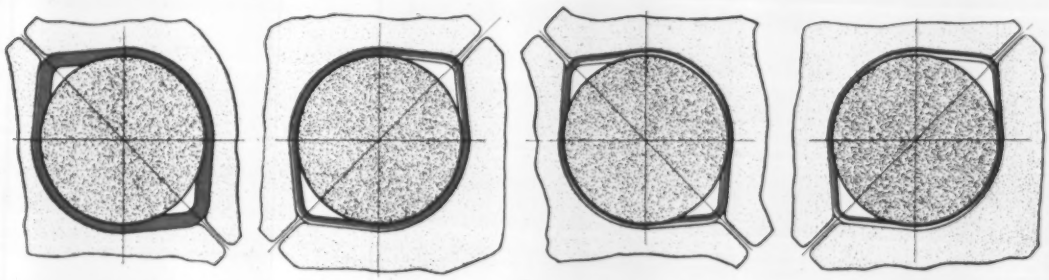
TIPS FROM A ROLL MAKER'S NOTEBOOK

MACKINTOSH-HEMPHILL DIVISION, E. W. BLISS COMPANY, Pittsburgh 3, Pennsylvania

Cast mill rolls • Johnston cinder pots • rotary tube straighteners • end-thrust bearings • heavy-duty lathes • steel and special alloy castings



STAND THREE STAND FOUR STAND FIVE STAND SIX

Severe service conditions at pass edges are shown graphically by these sectional diagrams of various stands of a nine-stand mandrel mill.

Solutions to some hole-rolling problems

Obviously, there is no single roll analysis to solve all seamless tube mill rolling problems. Nevertheless, in general, once the round has been pierced, the qualities needed in rolls for the later stands—whether the mill be a mandrel mill or a plug mill with reeling and sizing stands—are similar, varying only in degree.

Mandrel mills should get the best—Usually, the most severe operating conditions are to be found in mandrel mills. The rolls must provide high strength, uniform high hardness, resistance to slippage and freedom from scale pickup. The latter quality is especially important in this kind of mill, since the metal of the tube wall is being squeezed between the rolls and the traveling mandrel. We recommend *Midland Superalloy* nickel-chromium-molybdenum alloy steel rolls for this service. Their graphite-free composition and ability to be heat treated to high hardness levels makes them exceptionally resistant to spalling and fire cracking. Hence, they deliver pipe and tubing of top quality, providing long production runs between redressings.

The plug rolling mill process is easier on rolls—Plug mills (high mills), with their following reelers and sizers, place less severe demands on the rolls they use. The reeling stands spread the work over a fairly wide face, and the sizing stands are limited in the amount of reduction they can take by the tendency of the tube wall metal to upset. *Technigrain* or *Nironite AX* alloy iron rolls have the depth of hardness penetration and smoothness of surface needed to provide even wear throughout a complete plug mill set-up. In certain cases, *Technikrome* alloy steel rolls provide the additional strength sometimes needed in the high mill itself.

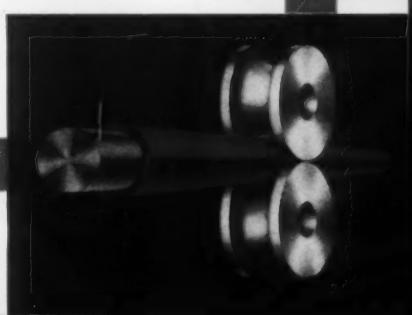
Whether or not your rolling facilities include seamless tube mills, you'll find that Mack-Hemp can offer you helpful, cost-saving advice on all matters of roll selection and use. Why not call or write us today?

MACKINTOSH-HEMPHILL

You get more tonnage from the rolls with the Striped Red Wabblers

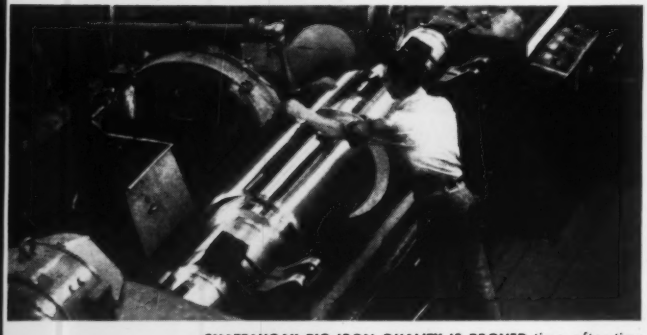
Division of E. W. BLISS COMPANY

Presses, Rolling Mills, Special Machinery

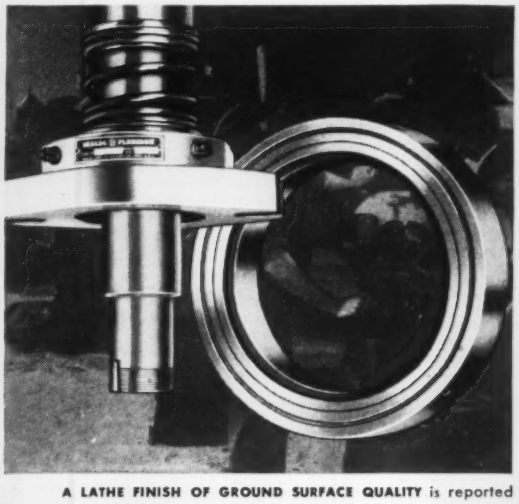


PROOF OF QUALITY

REPUBLIC COLD DRAWN CARBON BARS are used in the manufacture of Shotgun Barrels by Harrington and Richardson, Inc. Mr. Arthur F. Hird, Chief Engineer, states his reasons in a letter reproduced on the opposite page. For information on how Republic Cold Finished Steel may help solve your manufacturing problems, contact your local Republic office or mail coupon.



CHATEAUGAY PIG IRON QUALITY IS PROVED time after time by the superior results achieved in producing giant mill rolls. One such roll is shown being finished to an extremely smooth surface. Other requirements include high strength, wear and heat resistance, and ease of machinability. Chateaugay, Republic's exclusive pig iron fills the bill perfectly. For details on low phosphorus, copper-free Chateaugay, mail coupon.



A LATHE FINISH OF GROUND SURFACE QUALITY is reported by Sealol Corporation, Providence, Rhode Island, in the production of mechanical shaft seals using Republic Free-Machining ENDURO® Stainless Steel Bars. In addition, ENDURO's excellent physical properties overcome shaft wear and attack by corrosive elements. Republic can furnish ENDURO in a complete range of analyses, in the best form to meet your needs. Send coupon for data.

HIGH QUALITY IRON POWDER PARTS are easier to produce using Republic CDF Iron Powders. CDF means Controlled Dimensional Factor in three types of powders—Type "G" for growth, Type "N" for normal (no dimensional change), and Type "S" for shrinkage after sintering. Send coupon for booklet ADV-763 containing full information on test evaluations, chemical composition, and physical properties of Republic CDF Iron Powders.

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PLEASANT 7-6341
CABLE ADDRESS HARRICH

January 1958

Republic Steel Corporation
Republic Building
Cleveland 15, Ohio

Gentlemen:

Ever since Harrington & Richardson, Inc., manufacturers of all types of small arms, was organized in 1871, their Metallurgists and Engineers have been experimenting to find the most suitable material for the manufacture of Shotgun Barrels. The steel required had to be of uniform structure and high quality with physical and dimensional stability. It also had to be well suited for machining at higher feeds and speeds, effect longer tool life, produce better surface finish, and provide the higher ultimate strength required by today's high pressure, smokeless powder ammunition.

Manufacturers of Gun Barrels are all too familiar with the specific problems involved. Operations such as Deep-Hole Drilling, Deep-Hole Reaming, Deep-Hole Burnishing, and Long-Length Turning operations as affecting polishing can make or break a process if such operations are beset by material problems causing high operational costs and excessive rejects.

Republic Cold Drawn Carbon Bars are the answer to the problem. For the past five years Harrington & Richardson, Inc. has been using one and three-sixteenth diameter, cold finished, magnetic tested, stress relieved bars with a maximum of success.

Harrington & Richardson, Inc. has found that the uniformity of structure eliminates hard spots in machining - the bugaboo of surface finish - and produces a barrel of uniform strength capable of withstanding great forces.

The quality of the steel is reflected in the surface finish achieved. Republic Cold Drawn Carbon Bars are relatively free of sub-surface defects and incipient cracks appearing at the final turning and burnish "bore buttoning" operations. Its physical and dimensional stability reduces the need for constant machine adjustments and straightening operations. All of these characteristics combine to reduce rejects to an absolute minimum effecting low operational and material costs.

Republic Steel Corporation can indeed be proud that this material enables Harrington & Richardson, Inc. to offer higher quality firearms to sportsmen at very moderate prices.

Very truly yours,

Arthur F. Hird
Chief Engineer

AFH:em

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☐ Cold Finished Steel Bars ☐ ENDURO Stainless Steel
☐ Chateaugay Pig Iron
☐ Please send Booklet ADV-763 on Republic CDF Iron Powders

Name_____ Title_____
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No matter how many cutting tools You can get the "whole package"

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Take a close look at this set-up and you'll see these 7 tools: Center drill, cobalt drill, carbide core drill, facing and turning tool, roughing reamer, finishing reamer, tap.

One man supplied all seven tools. And he, of course, is your Morse-Franchised Distributor . . . your only source for all the varied requirements of a complete tooling job like this. And the job is protected . . . *results insured* . . . by Morse Quality in every single tool. So call in this "1-man team" today . . . he makes Morse Tooling pay *all ways.*

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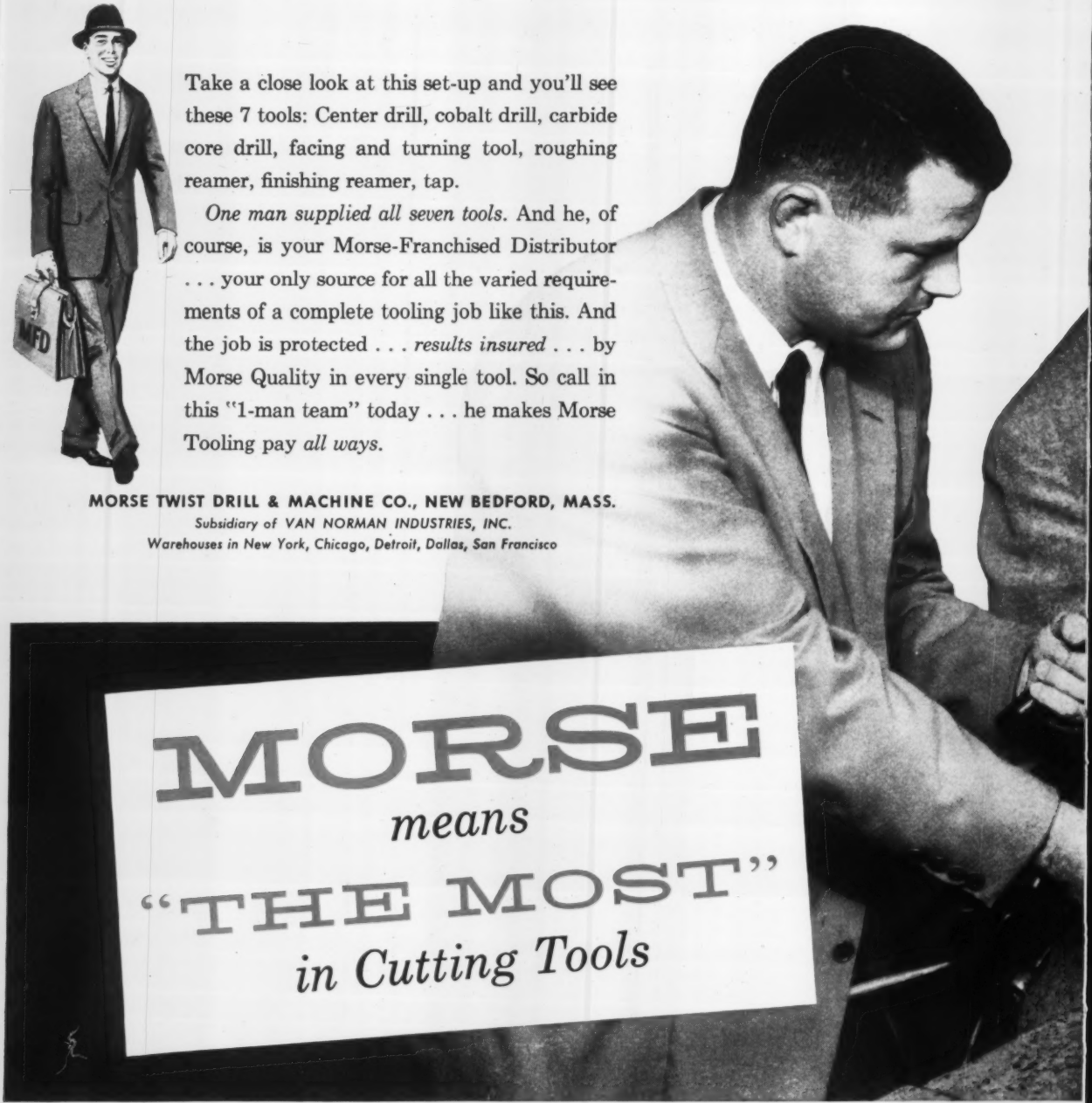

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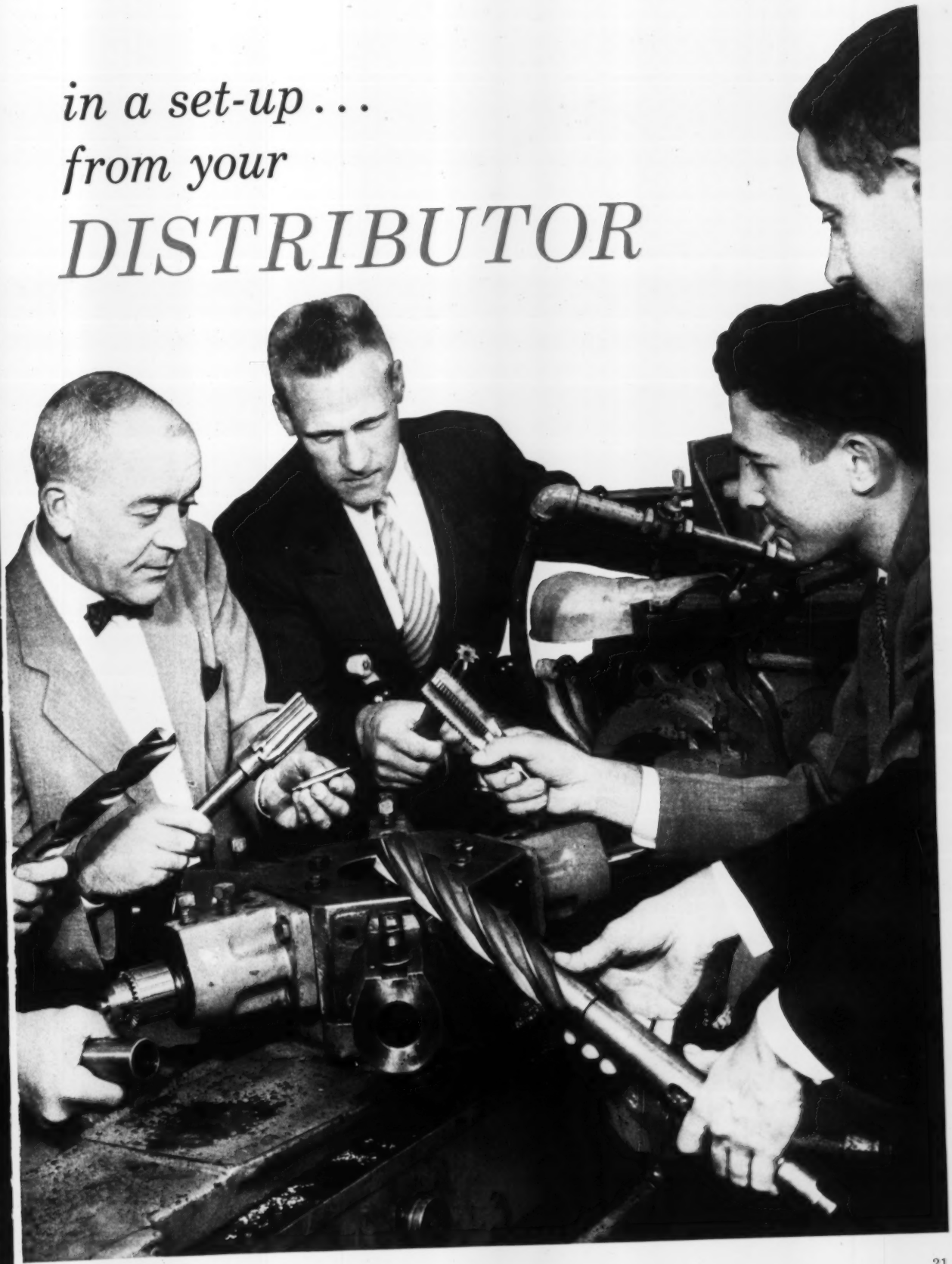

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SIMONDS SAW AND STEEL CO.
FITCHBURG MASS

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CALENDAR
OF MEETINGS

July 14-16, Truck-Trailer Manufacturers Association: Summer meeting, Homestead, Hot Springs, Va. Association's address: 710 Albee Bldg., Washington 5, D. C. Managing director: John B. Hulse.

July 23-26, National Tool & Die Manufacturers Association: Summer board meeting, Mt. Washington Hotel, Bretton Woods, N. H. Association's address: 907 Public Square Bldg., Cleveland 13, Ohio. Executive vice president: George S. Eaton.

Aug. 11-14, Society of Automotive Engineers: National west coast meeting, Ambassador Hotel, Los Angeles. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Aug. 19-22, American Institute of Electrical Engineers: Pacific general meeting, Hotel Senator, Sacramento, Calif. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Aug. 19-22, Western Electronic Show & Convention: Pan-Pacific Auditorium, Los Angeles. Information: WESCON, 1435 S. LaCienega Blvd., Los Angeles 35, Calif.

Sept. 7-12, American Chemical Society: National chemical exposition and conference, International Amphitheatre, Chicago. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 8-11, Society of Automotive Engineers: Farm, construction, and industrial machinery meeting, production forum, and engineering display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Sept. 10-11, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago, Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

Sept. 11-12, Refractories Institute: Fall meeting, Broadmoor Hotel, Colorado Springs, Colo. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

Sept. 14-19, Instrument Society of America: Annual instrument-automation conference and exhibit, Convention Hall, Philadelphia. Society's address: 313 Sixth St., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

Sept. 16-18, Electronic Industries Association: Fall meeting, St. Francis Hotel, San Francisco. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Smooth, quiet power transmission for heavy loads—

H & S Herringbone Speed Reducers

The Herringbone gear design provides continuous tooth action — eliminates end thrust.

Built for heavy load conditions, Horsburgh & Scott Herringbone Speed Reducers give you dependable economical service. They're available in single, double and triple reduction units. Check these 9 points of superiority:

1. Overall design conforms to AGMA specifications.
2. All bearing loads are balanced, due to the symmetrical design of the gearing.
3. Oversize bearings and low speed shaft provide tremendous overhung load capacity.
4. Heavy wall and base-pad thickness provides extra housing rigidity.
5. Housing designed with box-type construction for maximum thermal capacity.
6. Every gear is accurately sized and then cut on a modern Sykes continuous tooth gear generator.
7. All pinions are integral with the shafts and are made of heat treated alloy forgings.
8. Dust and oil-proof seals are provided on shafts extending outside the housing.
9. Splash lubrication floods all bearings and gears.

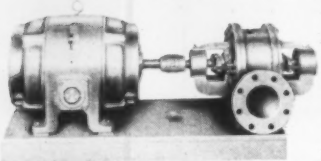
You'll find a wealth of information in our Catalog 55 describing our complete line of Speed Reducers. Write for it, or ask your nearby H & S representative.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 Hamilton Avenue
Cleveland 14, Ohio

BUILT-IN ASSURANCE

To Help Make Your Plans Work As Specified...

F-M WESTCO PERIPHERAL PUMPS

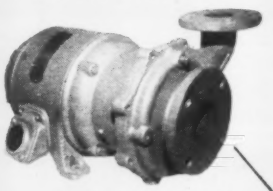


boiler feed
condensate return
hot and cold liquids
chemicals
refrigerants, etc.

Up to 200 gpm., pressures to 900 ft. High pressure at normal operating speeds. Handle widely varying heads with little change in capacity. Sizes 1¼" through 2½".

F-M BUILTOGETHER CENTRIFUGAL PUMPS

hot and cold liquids
liquid circulation
low-viscosity liquids
boiler feed
cooling towers, etc.



Up to 900 gpm., pressures to 525 ft. Close-coupled pump and motor units mount horizontal, vertical or angular. Sizes ¾" through 5".

The best-laid plans can go astray when mechanical equipment fails to deliver according to expectations or fails to give sustained peak performance. That's why Fairbanks-Morse builds something extra into all pumps so your plans work *as specified.*

F-M Pumps You Can Rely Upon

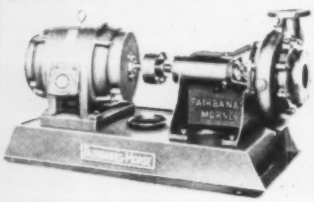
Full-rated capacity guaranteed... with built-in safety margin to assure maximum efficiency under most severe use. Rugged, durable, precision-made to maintain efficiency with minimum service.

Expert Help When You Want It

F-M Engineers are ready to work with you on any of your pump problems.

F-M NON-CLOG PUMPS

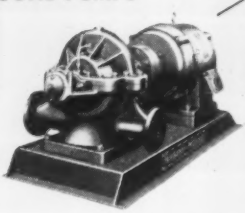
plant waste
slurries
paper stock
fruit
fish
vegetables, etc.



Up to 30,000 gpm., pressures to 175 ft. Sizes 2" through 20". Vertical or horizontal. Bladeless or conventional.

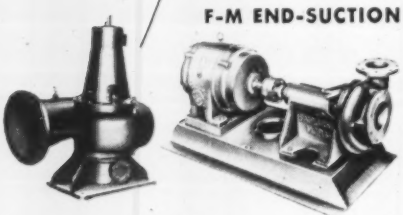
F-M SPLIT-CASE CENTRIFUGAL PUMPS

water supply; plant service
booster; circulating
air conditioning
refrigeration
chemical liquids
boiler feeds, etc.



Up to 50,000 gpm., pressures to 700 ft. Sizes 1½" through 36". Single stage or multistage.

F-M END-SUCTION PUMPS



hot and cold liquids
chemicals
circulating liquids
low-viscosity liquids
cooling towers
condenser circulation, etc.

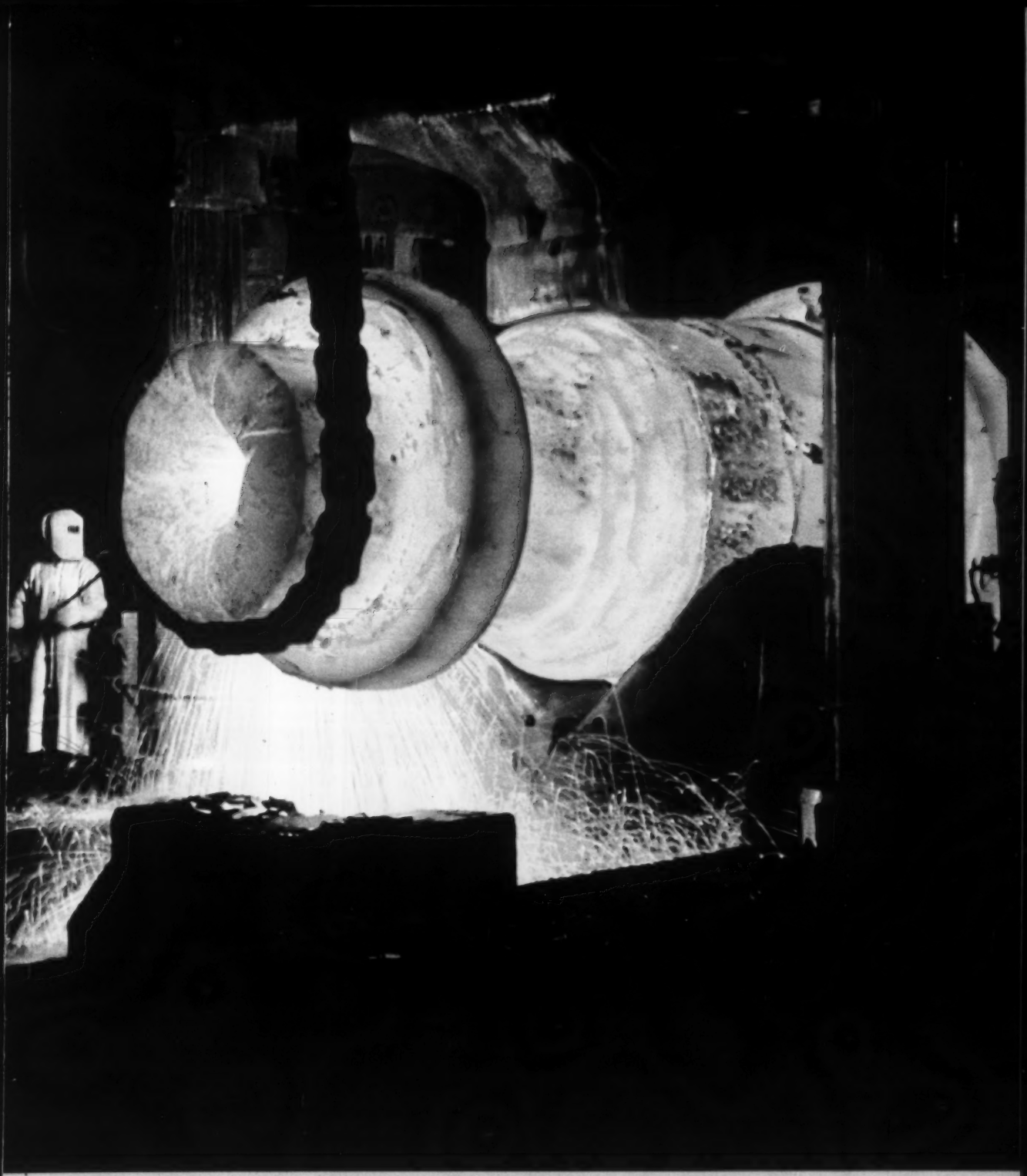
Up to 100,000 gpm., pressures to 250 ft. Sizes ¾" through 54". Horizontal or vertical.

For full information about Fairbanks-Morse pumps, call your F-M Sales Engineer or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS

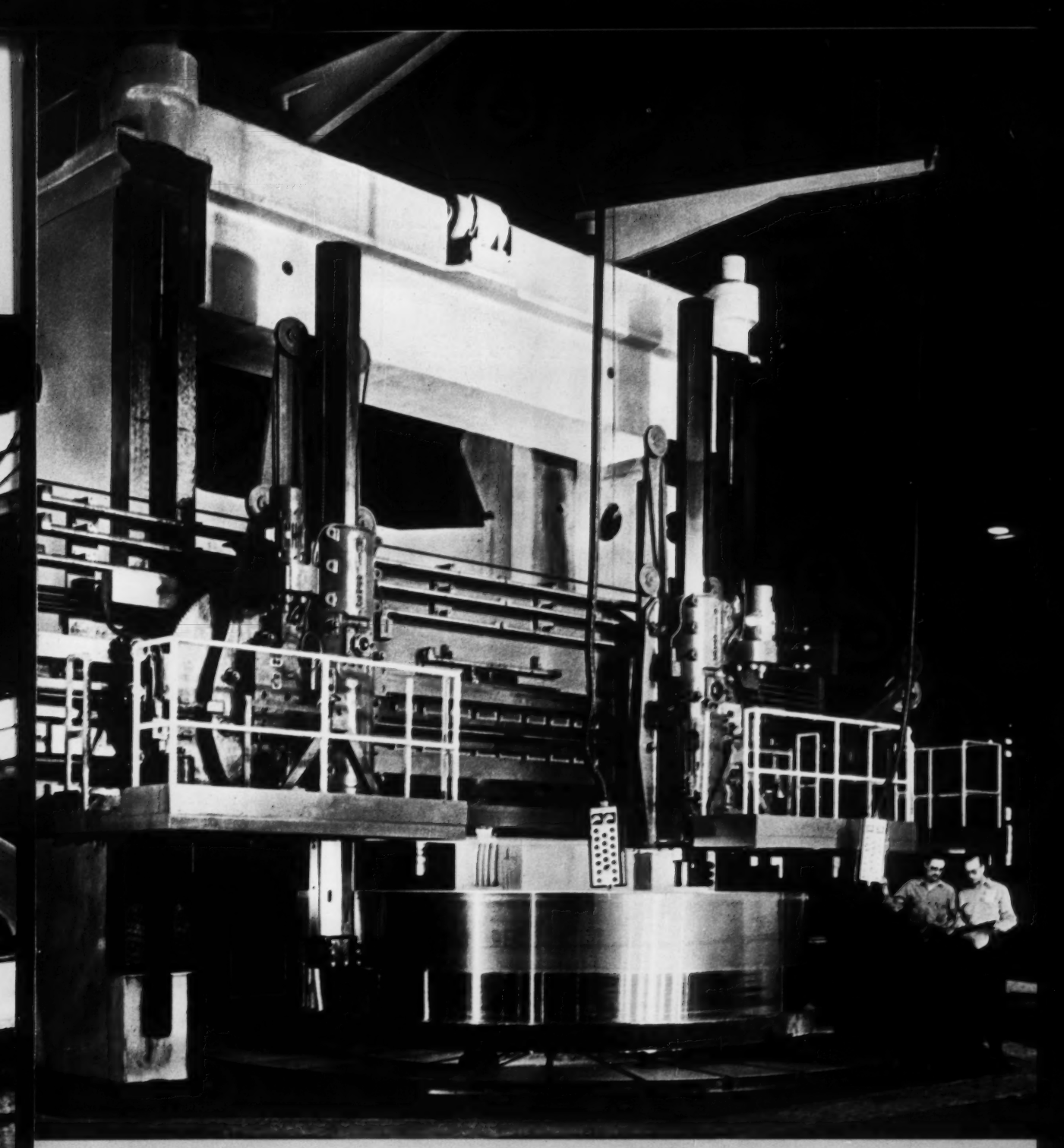


BIG SHAFT FORGING FROM BETHLEHEM

One big shaft coming up! The glowing mass of carbon-vanadium steel begins to take shape in a 7500-ton hydraulic press at the Bethlehem forge shops. The finished forging, weighing approximately 74 tons, will be part of a hydroelectric installation. Its overall length will be 26 ft 1 in.; flange diameters, 8 ft 10¼ in. and 6 ft 8¾ in.; main body diameter, 3 ft 10¼ in.; bore diameter, 1 ft 8 in.

WILL HELP CREATE POWER AT THE DALLES

Here's another huge shaft, a type you'll often see in Bethlehem's forge and machine shops. It's one of eight we made for the generating equipment at The Dalles Dam, on the Columbia River. This one weighs 95 tons; is over 33 ft long, and has a maximum diameter of 8 ft ½ in. The steel is carbon-vanadium with a tensile strength of 70,000 psi and a yield point of 35,000 psi.



NEW CAPACITY ADDED TO BETHLEHEM MACHINE SHOPS

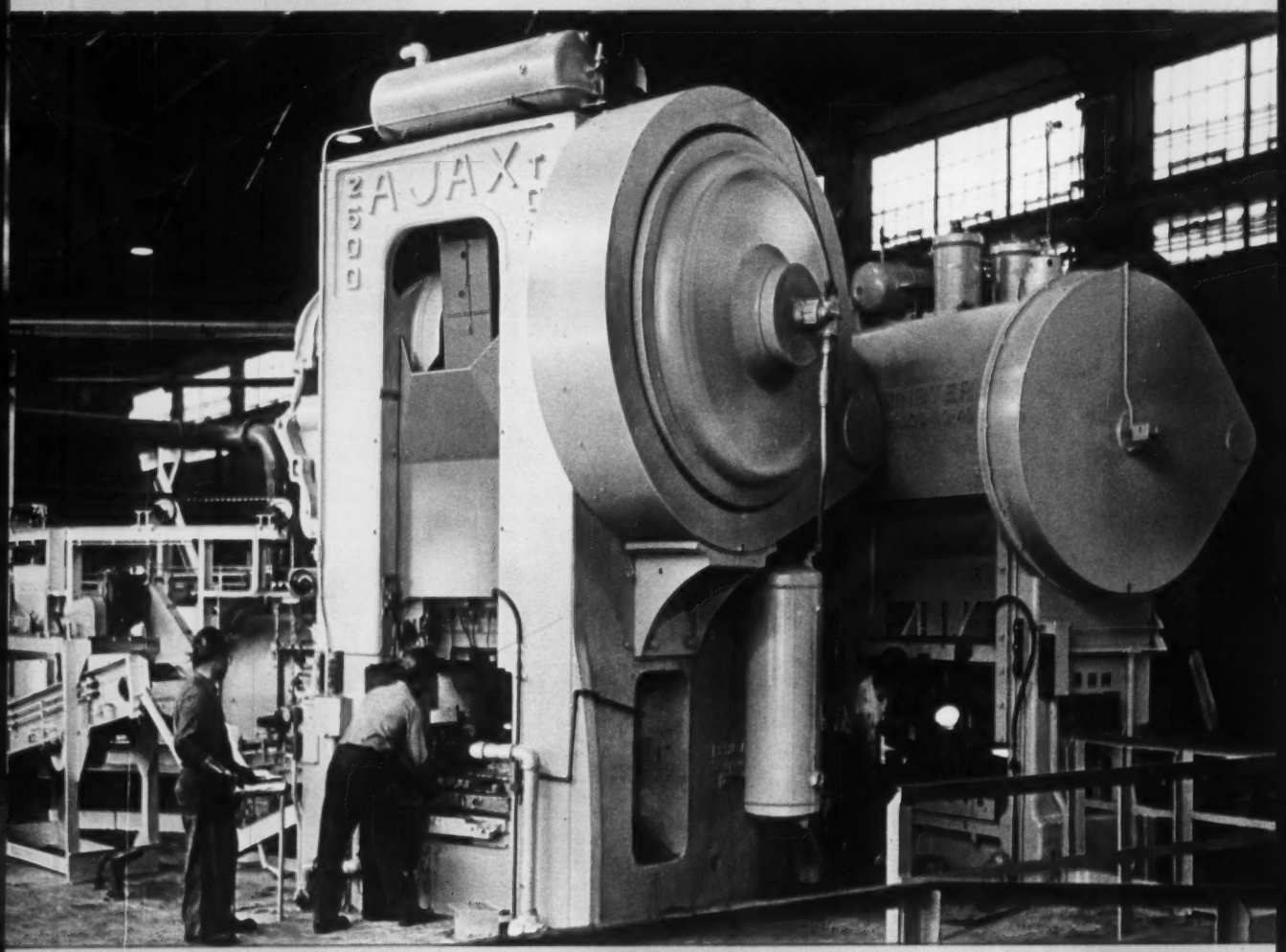
This king-size vertical boring mill is one of several machines that add new capacity to Bethlehem facilities. It has a 20-ft table, a swing of 20 ft 3 in., and a height of 11 ft 9½ in. under the tools. Thus it can handle pieces much larger than that forged gear tire. Electronically controlled, it has infinite feeds from 0.0005 in. to 1 in. per revolution; speeds from 0.34 to 18 rpm.

SMALL FORGINGS HAVE THEIR INNINGS, TOO

At the same time a big-tonnage item is being forged, treated, or machined, another part of the Bethlehem shops may be turning out small pieces weighing only a few pounds. Bethlehem produces the full range of forgings, from the largest ever needed to the smallest.

Shown here is a 2500-ton mechanical press, a power-packed machine that's as modern as today. Yet for all its size and power, it's used for making forgings under 50 lb in weight. Auxiliary equipment includes a 14-ft rotary furnace with automatic charge and discharge; the latest type of trimmer; and roller conveyors throughout the entire system. For the production of forgings used in aircraft, drilling tools, mining and earth-moving machinery, etc., this outfit is unsurpassed.

Also available at Bethlehem are steam and board drop hammers to 8,000 lb; mechanical presses to 3,000 tons; upsetters to 9 in.



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*

BETHLEHEM STEEL

BETHLEHEM STEEL

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586, Printed in U.S.A.

The FIRST Oil-Free Water Soluble Coolant With Oily Properties

HAMIKLEER

Reg. U.S. Pat. Off.

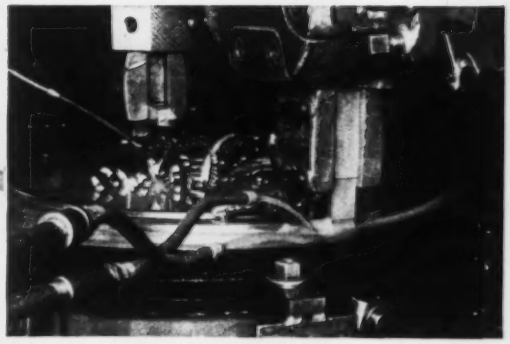
Offers 9 Outstanding Benefits

HAMIKLEER is the latest idea in coolants for metalworking. This oil-free, water-soluble coolant and rust preventive is receiving wide acclaim because it:

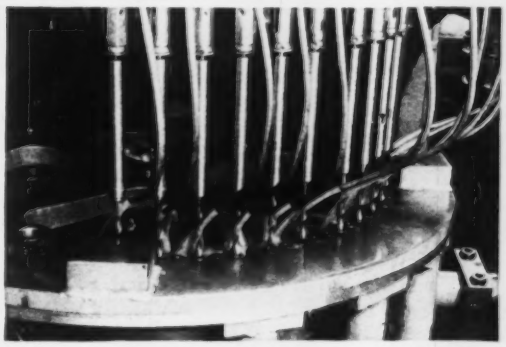
1. Eliminates the need for and cost of many different coolants as it can be used on a wide variety of applications.
2. Eliminates cleaning operations since it prevents rust.
3. Is rancid-proof, foam-proof, eliminating foul odors, increasing operator acceptance.
4. Eliminates rejects since it provides finer surface finishes, longer tool life.
5. Is transparent so gauging can be done without shut-downs.
6. Outlasts soluble oil emulsions by five times.
7. Costs less for make-up since only water is added.
8. Will not affect workers' skin.
9. Eliminates costly disposal problems. HAMIKLEER will not pollute streams if oils are kept out of mixture.

HAMIKLEER dissolves instantly in any water to make a clear, thin solution that can be made more dilute than is practical for ordinary soluble oils. The solutions are more efficient at the longest range dilution . . . as proved by years of experience on many different metalworking operations.

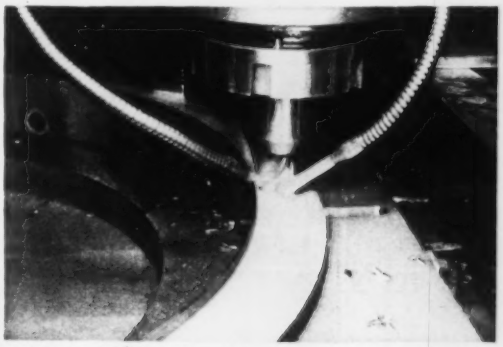
Write for a free sample to test on your own metalworking operations.



Bullard-Double Head Self-Indexing Machine. Stock: 410 stainless; Tools: carbide tips, both rough cuts; RPM: 40; Feed: .016; Micro Finish: 61; HAMIKLEER Dilution: 1:50.



Bausch Multiple Drill Press. Tool: High Speed Steel; Stock: 316 and 410 Stainless; RPM: 400; Feed: .003; Tolerance: ± .005 Micro-Finish: 125 (without reaming); HAMIKLEER Dilution: 1:50.



Cincinnati Hydrotel Contouring Machine. This is a milling operation, end cutting scallops. Tool: High Speed Steel, 3 flutes high; RPM: 200; Feed: 3"; Depth of Cut: .530; Micro Finish: 61; HAMIKLEER Dilution: 1:50.

This free test kit is sent to all HAMIKLEER users. It permits operators to test dilution right at the machine, *saving considerable time.*

HARRY MILLER CORP. HAMICO 4th & BRISTOL STREETS PHILADELPHIA 40, PA.

Manufacturers of
HAMIKLEER, ACTIVOL, HAMICOTE,
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Original Products and Processes Since 1936

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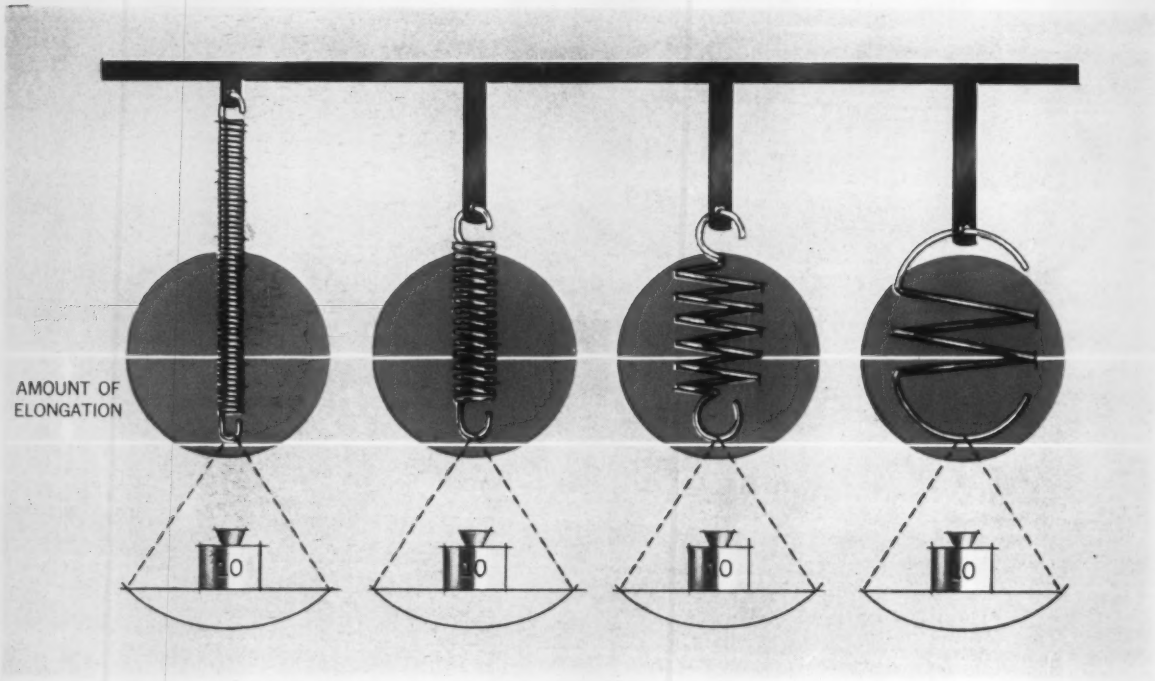

Spring shape and performance— or what does Spring Index mean?

One man distributes his 150 lbs. over a lean 6 ft. frame; another packs the same avoirdupois within a stocky 5 ft. 6 in. height. In a man, this might be expressed as the ratio of height to belt size. In a spring, it's a handy little ratio D/d, that of mean coil diameter to wire diameter. The illustration shows it quickly—same load—10 lbs.; same deflection—0.4 in. But in shape they range from the long thin spring at left with 75.8 coils and a spring index of 3, to the short fat spring at right with few coils and an index of 12. Application of the index ratio is particularly useful where space restrictions exist.

Our long years of specialization have developed many short cuts to spring specification to make your work easier. For general reference purposes write for pamphlet "Spring Design and Selection in Brief."

Associated Spring Corporation

General Offices: Bristol, Connecticut

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B-G-R Division, Plymouth and Ann Arbor, Mich.
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Wallace Barnes Steel Division, Bristol, Conn.
Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

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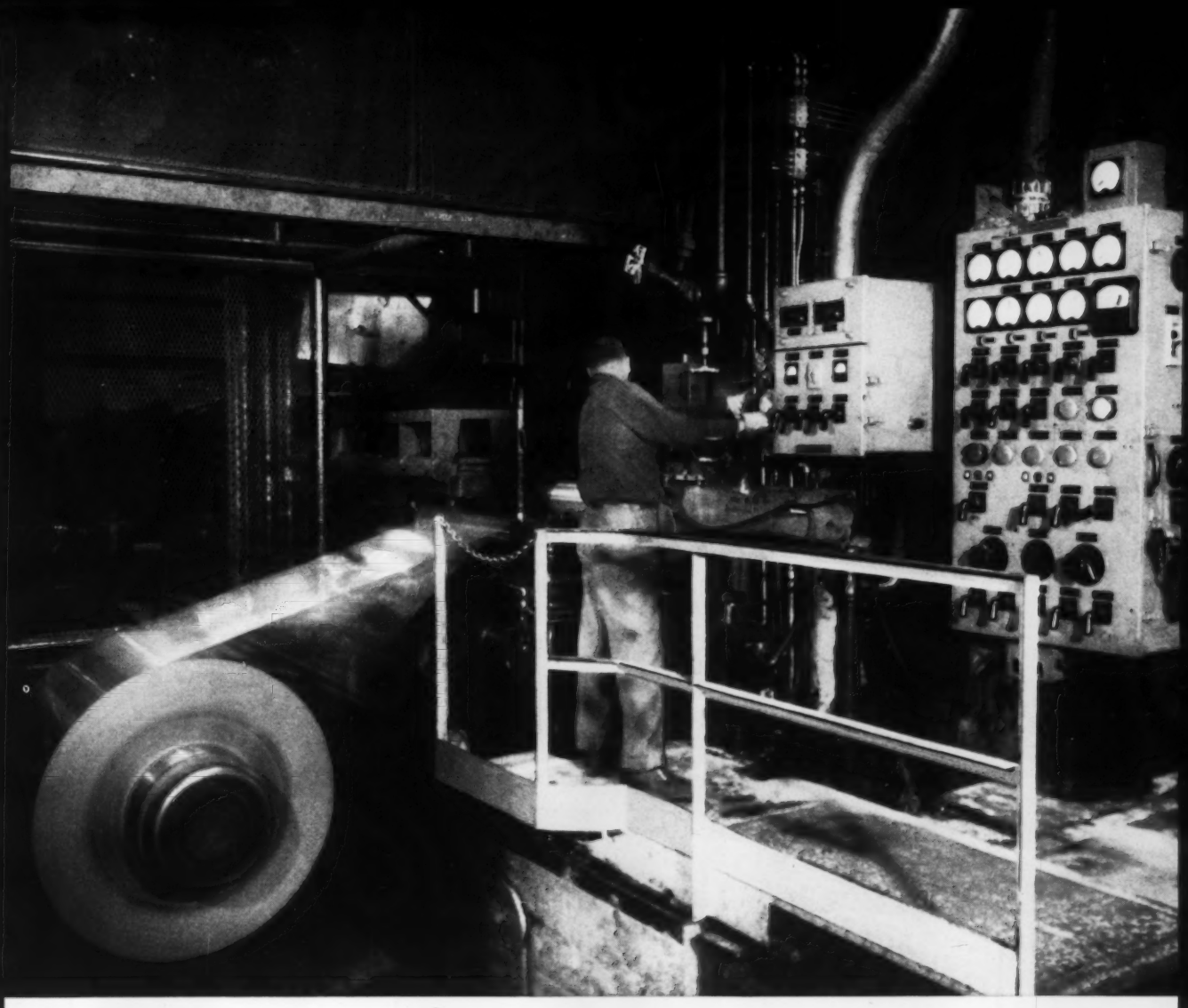


J-96121-1

AT 6000 FEET PER MINUTE...

Westinghouse Automatic Gauge Control on Wheeling Steel's New Tin Plate Mill Assures Plus/Minus .0001 Tolerances

In December, 1957, the new five-stand, 6000-fpm, tandem tin plate mill was officially put in service at Wheeling Steel Corporation's Yorkville, Ohio plant. The new 48" mill has 22,500-hp total drive capacity to produce tin plate and heavier strip at speeds up to 6000 fpm.

Westinghouse equipment is used, entirely, to Power-Up this modern installation. One of the most outstanding new developments utilized is the Automatic Gauge Control, designed and furnished by Westinghouse—a practical necessity on a high-speed mill of this type.

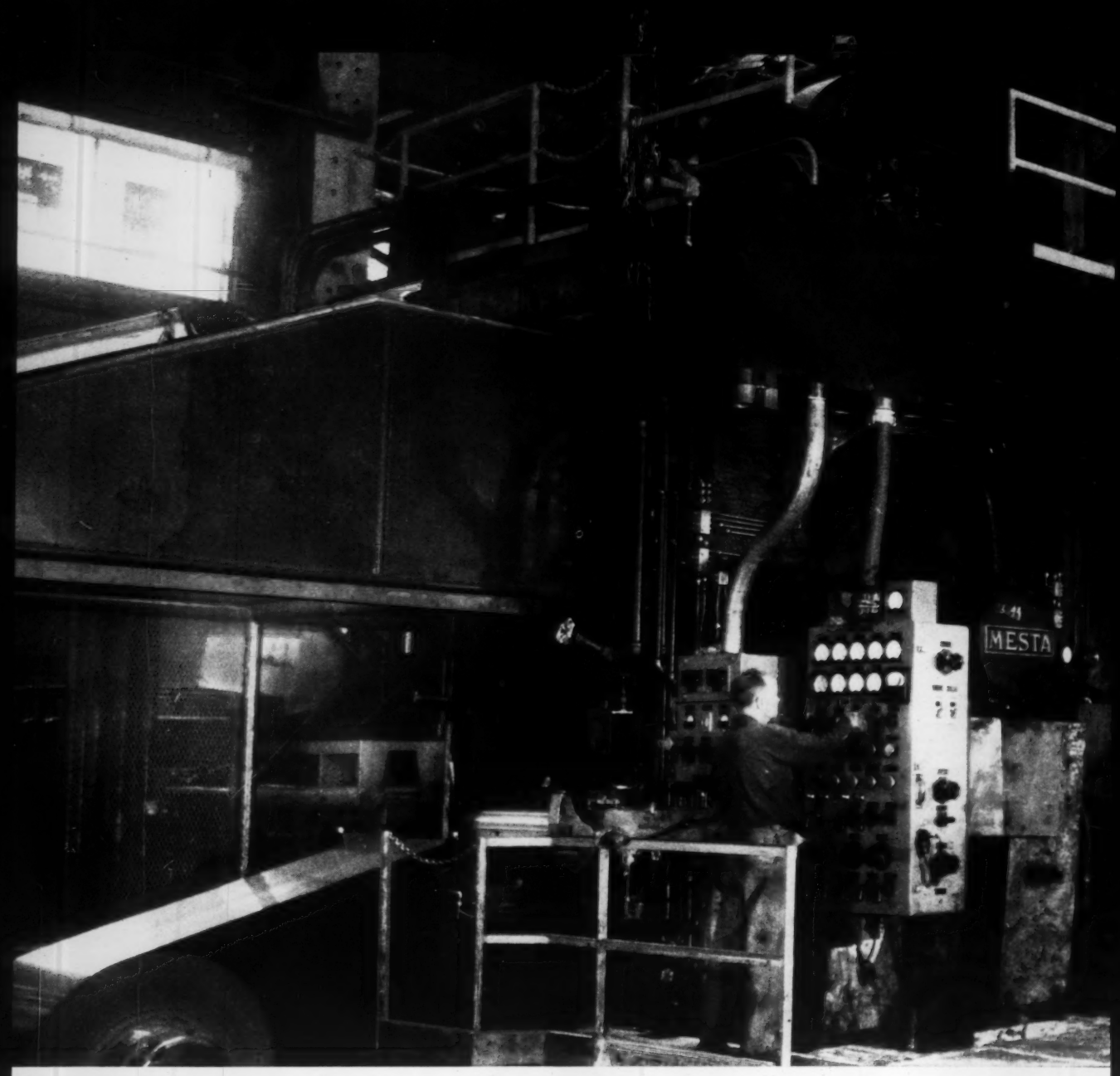
Other Westinghouse equipment furnished for this installation at Wheeling includes: main drive and all auxiliary motors, Magamp* regulators for main drive and variable voltage screwdown controls, M-G sets, brakes, outdoor substations, switchgear, power center, and control centers.

From planning to design, installation and start-up . . . Westinghouse can help you Power-Up. Consult your Westinghouse sales engineer for complete information. Or, write Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pennsylvania.

*Trade-Mark

YOU CAN BE SURE...IF IT'S Westinghouse

Westinghouse Equipment Is Used Throughout the New Five-Stand Tandem Mill at Wheeling Steel Corporation's Yorkville Plant.



New Mill With Automatic Gauge Control Gives More Usable Strip From Every Coil--- Less Production Time Loss

With the automatic gauge control, strip thickness is continually gauged and recorded. Through feedback of signals, the mill automatically adjusts for any variation. Gauge control starts at #1 Stand, controlling the #1 Screwdown to minimize incoming variations. It thereby assures a uniform strip continuously to the mill.

The gauge control at #5 Stand controls the #5 Stand and the reel to adjust the strip tensions and maintain constant gauge of finished strip. The use of this new gauge control assures continuing close tolerance (to within plus/minus .0001) without production slowdown or unnecessary interruption.

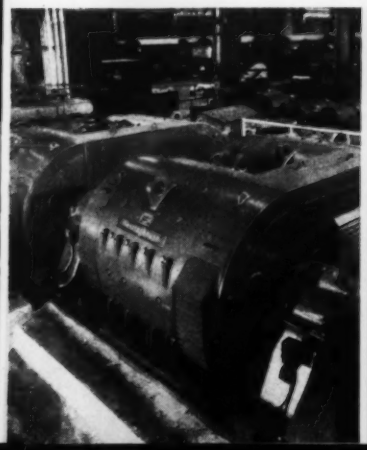
YOU CAN BE SURE...IF IT'S Westinghouse

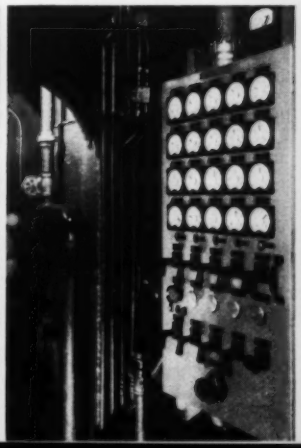
Two 3000-hp double armature motors for #5 Stand twin drive. Side-by-side mounting conserves floor space.

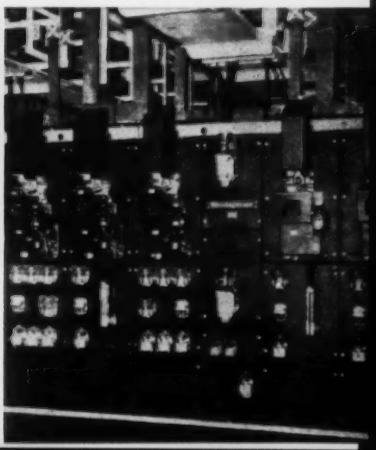
Tensiometer between stands shows strip tensions to guide operators in control of mill, and Westinghouse circular scale meters give maximum readability in minimum panel space.

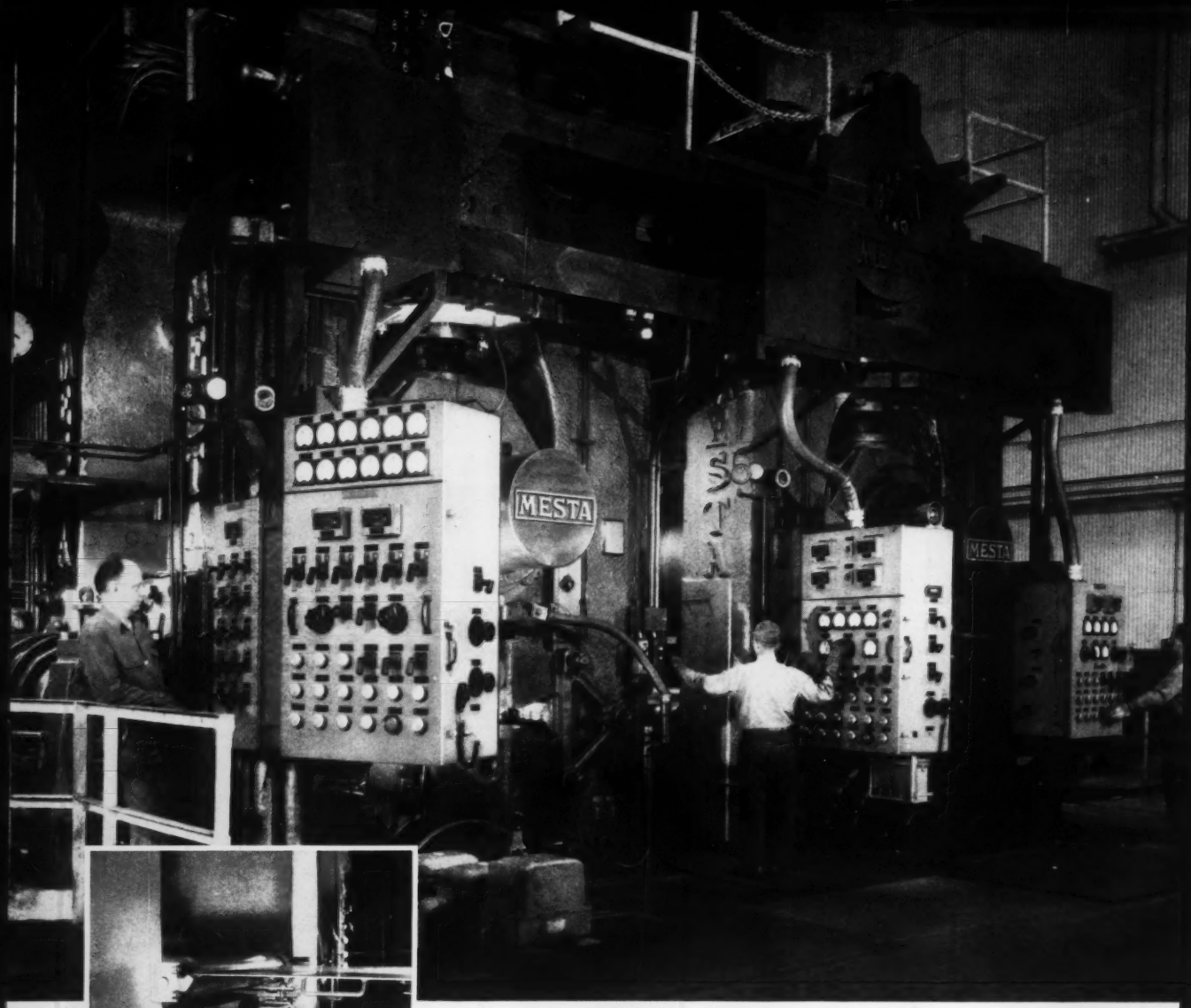
View of motor room showing main and screwdown M-G sets, switchgear and power center. Controls located on balcony at right.

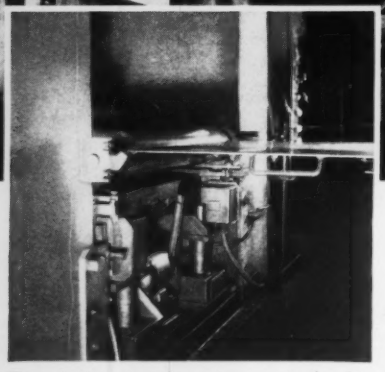
#5 Stand motor and generator line control panels. All circuit breaker and dynamic braking panels are located in basement.





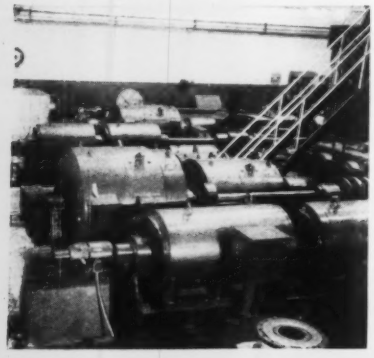






Regulating tensiometer controls #1 Stand to maintain constant tension in strip between stands 1 and 2.

Temper mill main drives. The entry and delivery tension roll twin drives feature special small-diameter machines to enable direct coupling to rolls on 20" vertical centers.



Westinghouse-Powered Temper Mill at Wheeling Gives Higher Tonnage—Less Scrap

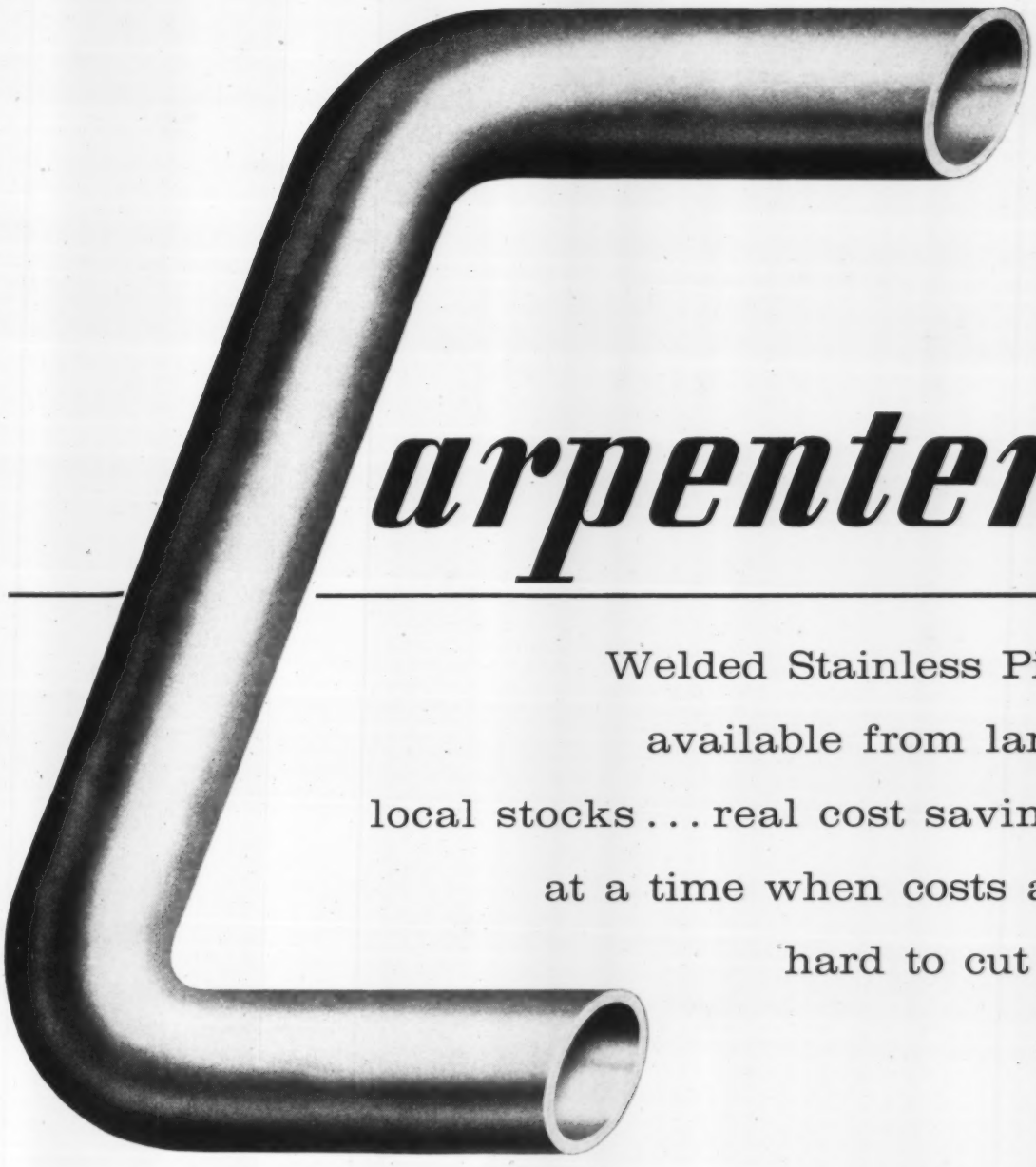
As part of their Power-Up program, the Wheeling Steel Corporation recently installed a new 48" two-stand temper-pass mill, rated at 5000 fpm, equipped with 4600 total horsepower.

This Westinghouse equipped mill has increased the amount of strip produced as well as guaranteeing a better product because of the improved control possible.

Westinghouse equipment furnished includes: main drive and auxiliary motors, M-G set, switchgear, control centers and operating controls.

J-96121-4

YOU CAN BE SURE...IF IT'S Westinghouse



Carpenter

Welded Stainless Pipe
available from large
local stocks . . . real cost savings
at a time when costs are
hard to cut . . .

• Carpenter Welded Stainless Pipe saves you money on initial cost, but that's only the beginning. Because it's consistently more uniform, Carpenter Stainless Pipe provides service benefits that increase effective corrosion resistance and give longer life. Schedule 5, 10 and 40 stainless pipe is stocked by your nearby Carpenter distributor in quantities that assure you immediate delivery. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

Carpenter

more than corrosion resistance

Stainless Pipe

Man's Eternal Struggle with the Machine

PROFITS ARE BEING SQUEEZED BETWEEN RISING MANUFACTURING COSTS AND THE NEED FOR COMPETITIVE PRICING!

The front office does know how critical your specification of equipment is . . .

Obviously, you and the other men in your plant, who devise production processes and select equipment, literally control the company's ability to make its product competitively.

That competitive ability earns the profit the company must have to stay in business.

Thus, you and the others, who specify equipment purchases, deal as directly with your company's profit as do the Board of Directors and entire executive staff.

Sciaky knows your important relation to the company's profits, too. That's why Sciaky resistance welding and production equipment is built to satisfy the requirements of *your* particular application. That's why Sciaky equipment is tested and proved to do your particular job *before shipment.*

As a result, it's easier for you to do a better job. You get the right equipment at the right price . . . you need only a minimum of time and cost for production tryout . . . you don't suffer from excessive rejects or re-work operations.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

A major manufacturer of air conditioning units took that advantage. As a result his production requirements were satisfied with a relatively low cost, versatile assembly line of standard welders adapted with simple tooling. The excessive cost of a complex, fully automatic machine (which was originally thought necessary) was avoided. Write for "Resistance Welding At Work," Vol. 4, No. 10 for details of this ingenious solution.

SCIAKY

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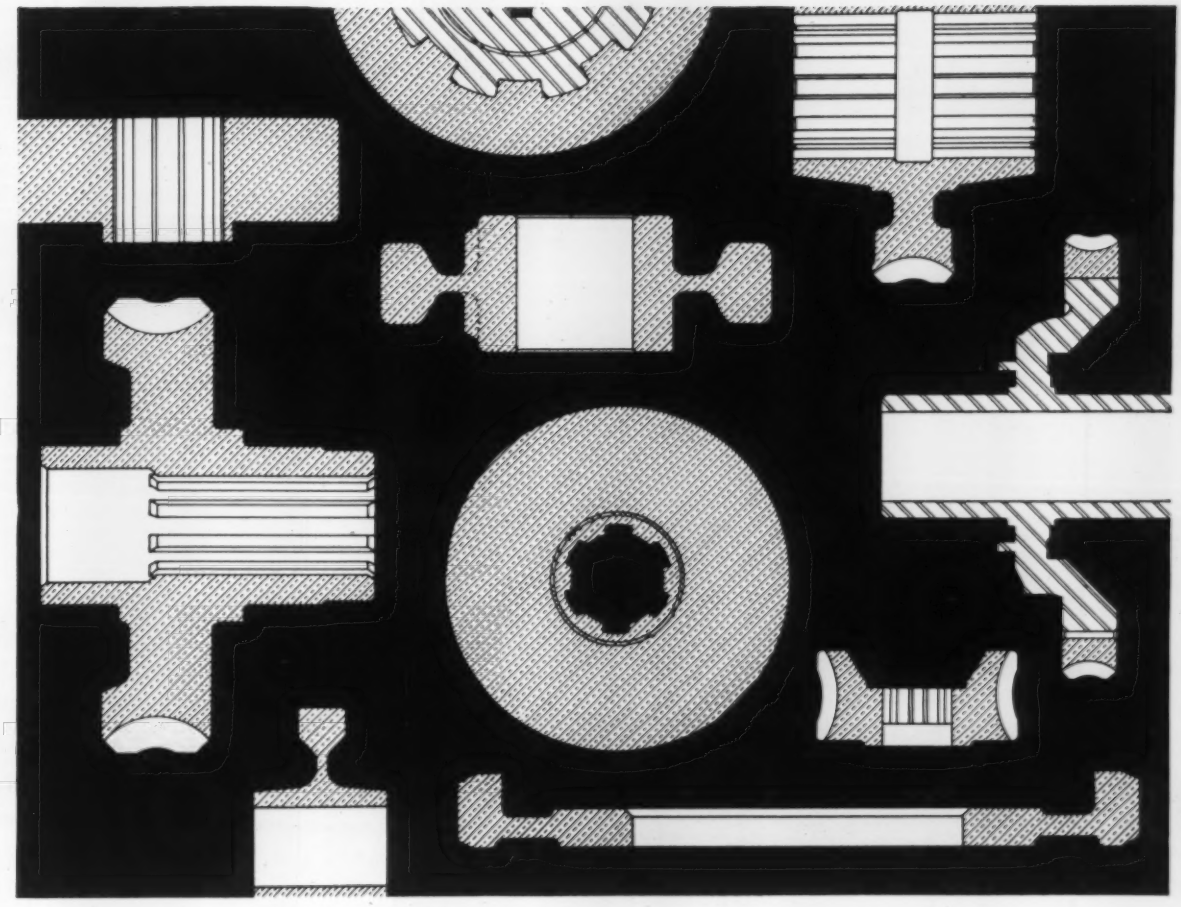
SCIAKY BROS., INC., 4909 W. 67th STREET, CHICAGO 38, ILLINOIS • POrtsmouth 7-5600



Gear Blanks . . . of any shape or size . . . we cast them in

Big gears are our specialty

Whatever the shape or size of the gear blank you need, NBD can cast it for you in gear bronze, nickel bronze, aluminum bronze, manganese bronze—to your specifications. Want iron or steel hubs cast in? We can do it. Want castings furnished rough, rough machined, or finished machined? Want sand castings, shell moldings, chilled rim or chilled three sides? You name it.

And we cast many blanks centrifugally . . . in sizes up to and even beyond 72″ in diameter. Centrifugally cast gears have proved their added strength, toughness and long-wearing characteristics for many problem applications. Perhaps they can do a job for you.

Got a metallurgical problem? NBD specializes in bronze metallurgy and casting techniques; has developed over 40 special alloys for gear blanks, bushings, bearings, pump components and other parts.

Take advantage of NBD's experience and knowledge of bronze alloys. Three strategically located plants are available to give you fast service. Call or write us for quotes or information.

AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

717 Grant Building, Pittsburgh 19, Pennsylvania

PLANTS IN: CHICAGO, ST. LOUIS, MEADVILLE, PA.

PROVED AT 3 STEEL PLANTS

Koppers phenol

removal process

. . . 98.8%+ efficiency
. . . less caustic required

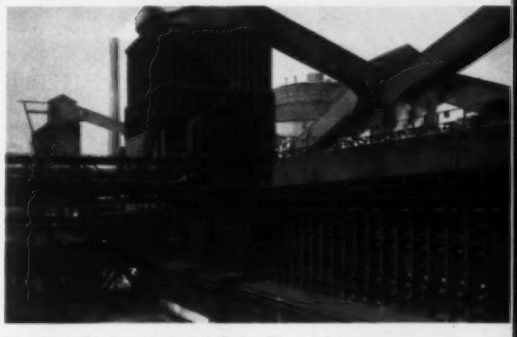
Three coke plants, two in the Chicago area and one in the Buffalo district, recently installed new Koppers dephenolizing systems. At each of these three plants, the Koppers process is removing in excess of 98% of the phenol from ammonia liquor.

NEW DESIGN—Koppers engineers have used Koch-Kascade towers for the counter-current contact of liquor and light oil. Such a design provides intimate mixing of the gently moving fluids . . . with a very high degree of phenol extraction. One coke plant using the Koppers process has been treating an average of 88,000 gal. per day of crude ammonia liquor. The phenol content has averaged 1,792 ppm for the crude liquor and 21.3 ppm for the treated liquor. The average dephenolization efficiency has been a whopping 98.8%! *And, in its first full year of operation, this plant used an average of only 0.61 pounds of caustic per pound of phenol removed.* What's more, the new Koch-Kascade contact towers have no moving parts to be maintained.

Improved design and construction of effluent-treating equipment is but a small part of Koppers vast service to the steel industry. We have 50 years of engineering and construction experience, and have designed and built nearly every type of steel-plant installation. If you're planning to build or expand—call on Koppers.

Pickle liquor treatment plants are designed and constructed by Koppers. A lime neutralization plant built recently by Koppers is shown above. For larger pickling installations, Koppers offers a regenerative process to eliminate the waste stream and recover the sulfuric acid for re-use.

Blast furnaces are designed and constructed by the Freyn Department of Koppers. 96 blast furnaces by Freyn are now in operation throughout the world, with a total annual capacity of more than 27 million net tons.

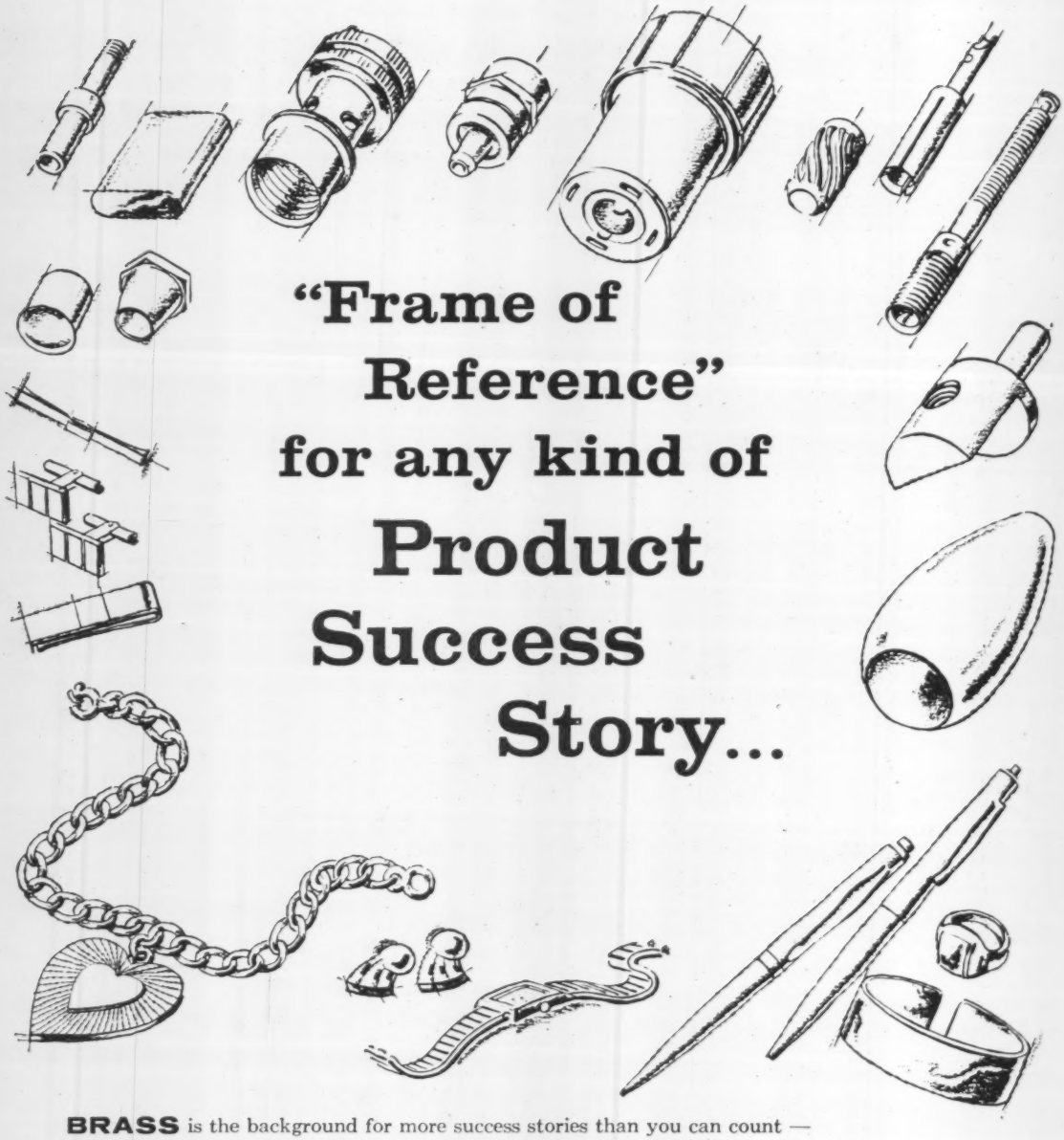


Koppers-Becker Underjet Coke Ovens feature waste-gas recirculation, precise combustion control and super-efficient heating design. 19,381 of these ovens have been installed by Koppers in the Western Hemisphere.

KOPPERS

KOPPERS

50 YEARS OF ENGINEERING AND CONSTRUCTION SERVICE
1908···1958



"Frame of Reference" for any kind of Product Success Story...

BRASS is the background for more success stories than you can count — in manufacturing and merchandising, *both*. In everything from precision parts to eye-catching personal accessories, good solid Brass is the base of success . . . for its workability, its customer acceptance as a guarantee of quality . . . and, especially today . . . its attractive price.

All these standard advantages . . . *plus something extra-special in the way of know-how, cooperation and speed of service* . . . are offered by Bristol Brass to help you write *your own* success story, beginning right now. And the first chapter for you to write is — to Bristol. *Today!*

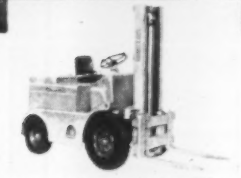
Bristol-Fashion

means Brass at its best

THE BRISTOL BRASS CORPORATION • SINCE 1850, MAKERS OF BRASS STRIP, ROD AND WIRE IN BRISTOL, CONNECTICUT

Bristol Brass has offices and warehouses in Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, Syracuse

Today's industries need Towmotor Continuous Operation



New functional body design introduced in the Towmotor "Pace-Maker" Series contributes greatly to trouble-free Towmotor Continuous Operation. New Model 680-P is shown above.

New "easy-off" hinged hood tilts back with seat – makes quick, convenient access to entire engine compartment possible – and without tools! Swift check-ups assured.

New planned-comfort features like adjustable off-center seating, extra leg-room under cowl, and easy-reach controls increase the efficiency of Towmotor operators.

Use Towmotor **Continuous Operation** to Lower Your Production Costs!

Why are Towmotor fork lift trucks known world-wide for their ability to *keep on the go* —working around the clock to move goods faster through *every department*—increasing productivity and reducing production costs?

Towmotor operators can answer that. They may not say *"advance engineering"*—*"new functional design"*—or *"maintenance-free operation"*—in so many words. But that's what their praise adds up to when they talk about a Towmotor.

You'll also hear lots about *"service that's there when it's needed!"* Over the years we have gone to great lengths to locate Towmotor-authorized service and parts depots close to every user. This helps to maintain the *continuous operation* of Towmotor fork lift trucks that is especially advantageous today. For complete details, send for our new "Pace-Maker" Booklet #SP-23.

Leaders for 39 years in building Fork Lift Trucks, Tractors and Carriers

TOWMOTOR – **GERLINGER**
THE ONE-MAN-GANG

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation, Cleveland 10, Ohio

☐ Send free Towmotor Booklet SP-23

☐ Send free Certified Job Studies relating to our business which is:

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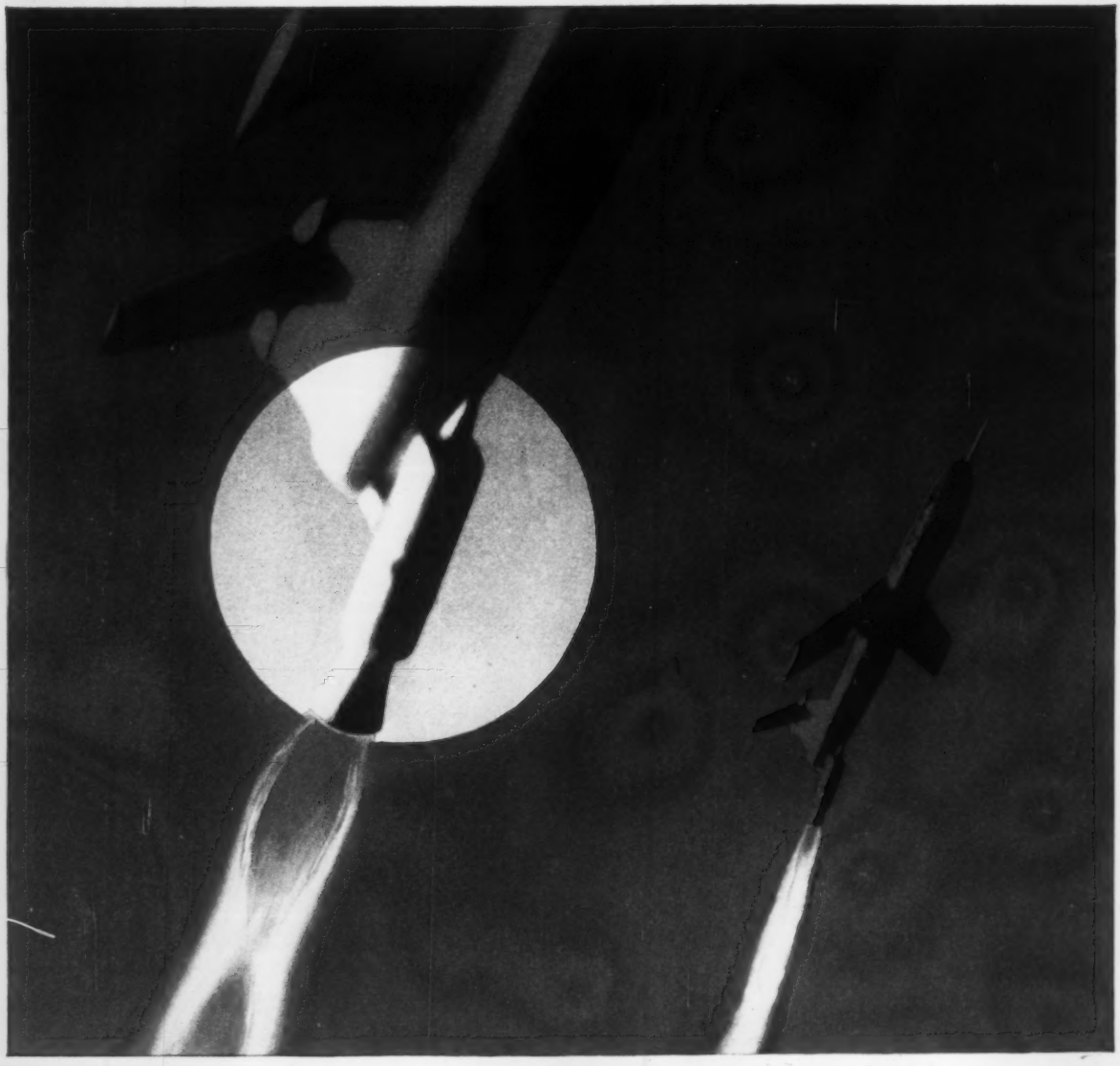
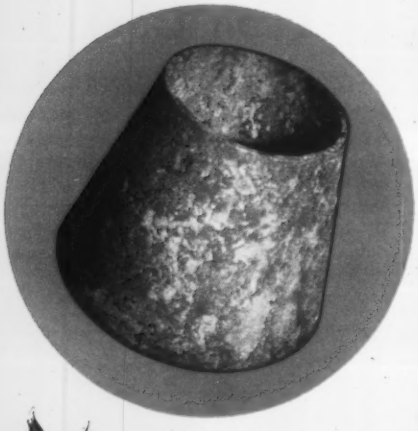
Mail to **TOWMOTOR CORPORATION,** Cleveland 10, Ohio





ONE-PIECE WELDED CONE FOR THE HOT SPOT

This is the vital nozzle cone of the Martin Mace guided missile. American Welding was able to form it in one piece from ¾-inch plate (FS-1020) and arc weld the joint to produce a tapered cone with a major diameter of 25 inches and a minor diameter of 15 inches. After heat treating and X-ray testing, it proved to be better and more economical than nozzle cones produced by the previous method of forming in two halves.

If you require a circular product and it's metal — call American Welding first.

New Products Catalog. Write today for 20-page catalog of circular products which American Welding can form, weld and machine for you.

THE AMERICAN WELDING & MFG. CO.
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AMERICAN WELDING

STEEL
June 30, 1958

Metalworking Outlook

Auto Labor Pact by September?

Signing of an auto labor contract isn't likely until September. Both sides continue to play a waiting game. General Motors Corp. will start to introduce new models by mid-September (Oldsmobile and Buick), so pressure will mount to get the labor situation regularized by then. Possible terms: A slightly better deal than the current offer to extend the present contract for two years. That offer would grant minimum wage increases of 15 cents an hour through June 1, 1960, plus cost-of-living allowances. The sweetening would come in fringes, probably in more liberal pension and Supplemental Unemployment Benefit (SUB) arrangements.

An Angle on SUB

A little recognized fact is that the size of the GM and Ford Motor Co. SUB funds and the terms under which they are managed have made or soon will make it possible to discontinue the 5-cent contributions. Higher state unemployment benefits have reduced average SUB payments to Ford workers to less than $15 a week. When that level is reached, the Ford fund need be only $33 million (60 per cent of the maximum $55 million). It's higher than that, so no more company contributions are needed for a while. Significance: This gives 5 cents for the companies to play with. With much heavier layoffs, Chrysler Corp. isn't in as good a position as other members of the Big Three.

Working Without a Contract

"Working without a contract must be similar to the experience a man has with a common law wife—fun for a while, but at times embarrassing." That's the way one industrial relations manager in an auto plant describes the present no-contract situation. "Less trouble than normal," says another. "Life is pretty serene," says a third. The union claims to have had little difficulty with dues collections. GM and Ford have had few problems stemming from their reduction in the amount of company-paid time committeemen or stewards can spend on union affairs. All the rest of the union-management relationships are just about the same, although grievance procedures have been modified in some cases.

Chicago Diemakers Get Boost

AFL-CIO tool and die makers have signed three-year contracts with 11 major Chicago area firms. The terms: 15-cent increase retroactive to June 1, 10-cent boost next June 1, and 10 cents in 1960. This puts tool and die scales at a minimum of $3.30 per hour there. One unusual feature: If the cost-of-living index goes up between now and June 1, 1959, a wage adjustment in addition to the 10 cents will be made.

Alan Wood First To Hike Steel Prices

Alan Wood Steel Co. led the parade of steel companies expected to boost steel prices. But its move was a tentative announcement that made it clear it

Technical Outlook—Page 79 Market Outlook—Page 119

would change its quotations to match whatever the larger competitors do. That tack was taken because of the uncertainty about what U. S. Steel Corp. will do (see Page 119). Alan Wood times its if-and-when action for July 7. One reason many producers are reluctant to increase July 1: Substantial tonnages sold under current prices cannot be delivered by midnight tonight.

Recession Arrested?

"We seem to be taking the first tentative steps out of the recession," says D. Maynard Phelps, University of Michigan professor and president of American Marketing Association. But he sees no sharp upturn in the making. The Department of Commerce says the recession slump in sales and production "has been arrested." May statistics were little changed from April's when the rate of decline slackened. Inflation continues, with the May consumer price index at 123.6, an all-time high.

Seaway Control Fight Begins

Following the President's order of June 21 "assigning the secretary of Commerce to direct and supervise the St. Lawrence Seaway Development Corp. with regard to all its affairs" (other than construction), Sen. Pat McNamara (D., Mich.) introduced a bill to make the corporation an independent federal agency. Involved is the toll question (see Page 56). Midwesterners generally fear Commerce control will mean higher tolls. Sen. Charles Potter (R., Mich.) has already come out for even lower tolls than suggested by the corporation. He wants the toll on iron ore shipments low enough "to keep our steel plants in the Middle West rather than on the East Coast."

ODM-FCDA Merger Set

Leo Hoegh, Federal Civil Defense Administrator, will head the new Office of Defense & Civilian Mobilization, which replaces FCDA and Office of Defense Mobilization. Gordon Gray, ODM chief, moves a little closer to the President by becoming his special assistant on national security, replacing Robert Cutler. Mr. Hoegh's appointment as chief of the combined agencies is generally regarded as part of the playdown being given to former ODM responsibilities like metal and mineral stockpiling.

Notes on Nonferrous

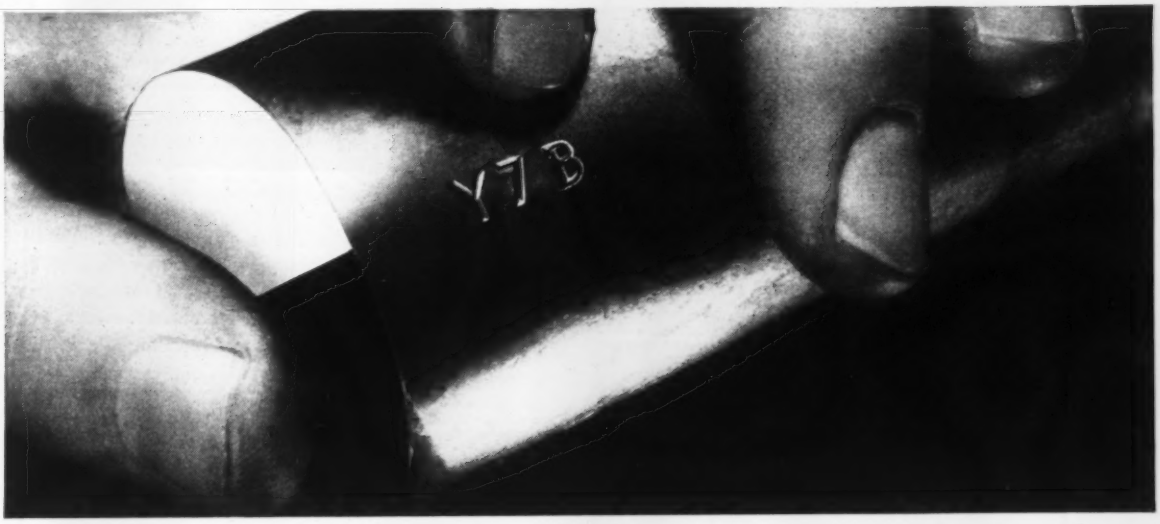
Eagle-Picher Co. has offered to reopen its zinc smelting operation in Henryetta, Okla., closed since Feb. 15, if the plant's 650 workers would agree to a 25 per cent pay cut. The union is studying the offer . . . Aluminum Co. of America will begin production of aluminum this fall in two new potlines at Massena, N. Y. Capacity of the new lines is 108 million lb per year. Two other idle potlines will be reactivated and will provide another 72 million lb of capacity. Four small lines, with 55 million lb of capacity, will be shut down.

Straws in the Wind

Average starting salaries for Lehigh University engineering grads this year are $474 a month, with metallurgists at the top of the list at an average $486 . . . A capital goods expansion by the early 1960s and a doubling of labor costs by 1970 were predicted at the Alloy Casting Institute convention . . . Jones & Laughlin Steel Corp. merged Stainless Steel, Strip Steel Divisions.

As positive as a fingerprint—

certified alloys from Ryerson



Alloys from different furnace heats can vary in hardenability and other working characteristics. But with Ryerson alloys you *know* the differences—before you start production. Ryerson alloys are marked with symbols identifying them with the particular heat from which they were rolled. As a Ryerson *extra* you get a dependable special report showing:

1. **Heat analysis.** Not just the chemical range for the type of alloy, but the specific analysis of the heat from which your steel was rolled.
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For more information about Ryerson alloys and the Ryerson Certified Alloy Steel plan, call your nearby Ryerson plant.

Principal products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing, industrial plastics, machinery and tools, etc.

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JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND
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Using ***CR Sheet Steel*** *in Strip Sizes for certain Stamping or Roll-forming Jobs?*

The PROOF of DSC STEEL is in its PERFORMANCE on Your Job

Here's a **NO-RISK,**

YOU-BE-THE-JUDGE, *JOB-TEST* PLAN

to help you prove whether ***DSC AccuRolled**** *STRIP can cut unit production costs for you*

CR SHEET STEEL is a pet product of ours. For one thing, it accounts for a large part of our Portsmouth Division's output. But . . . for certain stamping or roll-forming work now using sheet steel in strip sizes . . . DSC *AccuRolled* STRIP may be the more economical choice.

WHY SO? Because the money seemingly saved *per pound* (per your purchase order) may be lost *per unit of end product* (per your final cost sheet).

THIS REASONING IS SUPPORTED by strip's inherent working properties . . . *level* gauge and *even* temper; also uniform satin or bright finish when needed. On jobs where strip belongs, it usually outperforms sheet by improving output per man hour; by increasing yield of acceptable units; by improving assembly time because strip-made components fit together more surely; by improving the functional and/or appearance values of the product.

THE LURE OF LOWER PRICE is potent. A difference of even a fraction of a cent *per pound* sometimes gets in the way of a potential saving in unit costs. The one offers the appeal of immediate benefit. The advantages of the other seem more remote.

HERE'S A PLAN that helps you look beyond the purchase price. Let's say that one of your sheet-using jobs could stand unit cost improvement. We'll help you study the job's economic and mechanical requirements. On an even chance that DSC STRIP can cut your overall production costs . . . we'll roll and supply enough strip for a conclusive test under standard production conditions.

YOU'LL ENJOY RECURRING GAINS if DSC STRIP performs profitably. What happens if the test leaves you no better off than before? That also is provided for in the

DSC NO-RISK, YOU-BE-THE-JUDGE, JOB-TEST PLAN

For a person-to-person explanation of how the Plan works in your interest . . . please write our G.S.O. or call your nearest DSC Customer "Rep" office. We invite you to take us up on the understanding that YOUR DECISION WILL BE FINAL and THE RISK OURS.

Customer Satisfaction Is Our Business

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fresh rolled to your order
special rolled for your job

LOW CARBON: All Tempers, Gauge up to 3/16", in Controlled Satin or DEEP ROLLED *RBF* Finish.
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Call your nearest DSC Customer "Rep". . .Today?

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CUSTOMER "REP" OFFICES:

Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio., Dayton, Ohio., Detroit, Grand Rapids, Mich., Hamden (New Haven), Conn., Indianapolis, Jackson, Mich., Louisville, Ky., Milwaukee, Wis., New York, St. Louis, Toledo, Worcester, Mass., Winneconne, Wis.

DSC PRODUCTS: Coke . . . Coal Chemicals . . . Pig Iron . . . Basic Open Hearth Steel Ingots, Blooms, Slabs, Billets, Rods . . . HR and CR Sheet and Strip . . . Flat CR Spring Steel . . . Manufacturers' and H.C. Specialty Wire . . . Welded Wire Fabric

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Russia's Goal: The World

No one can become an expert on the Soviet Union during a 21-day visit. But we came away with indelible impressions of how the Communist system works and the dead seriousness of its objectives.

Under the Communist system, the people are told that they are masters of the land and of their own destinies.

That is anything but the truth. Control is concentrated in the Communist party with a membership of less than 4 per cent of Russia's 200 million people.

Nikita Khrushchev has eliminated members of the group who were set up to run the party after the death of Stalin in 1953. Those deposed include Molotov, Malenkov, and more recently, Bulganin.

As dictator, Khrushchev can manipulate the country politically and economically as he pleases.

When the goals of the sixth 5-year plan (initiated in 1956) weren't being met, Khrushchev proposed shifting industrial management to local economic councils. His plan was quickly adopted by the Supreme Soviet. In the process, a number of ministries were dropped, including iron and steel.

The emphasis more than ever is on heavy industry. Russia wants to build a stronger industrial base and fortify her defenses. Only 30 per cent of her industrial production is in consumer goods, which means that the average Soviet citizen for years to come cannot hope to have many of the conveniences in everyday use in Western nations.

A large share of the Soviet Union's industrial effort goes to building up the economies of other countries in the Communist orbit. Two years ago, an agreement was signed with Communist China to build 55 industrial plants in addition to 156 already under construction.

The USSR also reports that she is selling raw materials, machinery, and machine tools to countries outside the Iron Curtain. Nearly 25 per cent of her 1957 exports were machines and equipment.

With a controlled economy, it is easy to mix politics and economics. Export prices can be set at any level required to achieve political objectives.

Russia, while talking peace, is increasing the tempo of the cold war on the economic front. Her ultimate objective, as clearly stated by Khrushchev, is world communism.

Irwin H. Such

EDITOR-IN-CHIEF

New **Longer-Wearing** Pattern in Wire Rope Styles!

After three years of extensive field trials this, the newest of Roebling's wire ropes, is now ready to go to work for you on a service basis that will exceed that of *the wire rope you are now using*.

Roebling Herringbone* combines the best features of both regular and Lang lay rope constructions: being made up of two *pairs* of Lang lay strands and two strands of regular lay. The regular lay strands separate the two pairs of Lang lay strands. Thus, in one rope you have the superior flexibility and abrasion resistance of Lang lay and the greater structural stability of regular lay.

For the past three years, under all kinds of conditions, Herringbone has been used for general hoisting, holding and closing lines, shovel ropes, wagon scraper ropes and dragline ropes. The results have been wonderful . . . excellent flexibility, exceptional resistance to shock and abrasion, smooth, easy operation around drums and over sheaves, smooth spooling properties and structural stability unequalled by other rope for the same job.

There has never been a better time—or a wider need—for a wire rope that returns so much service for its cost. And, in addition to being a top performer on the job, Herringbone eliminates the necessity of stocking Lang lay for one purpose and regular lay for another.

You are invited to get in touch with your Roebling distributor or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for further and fuller details on the *investment* qualities of this new and highly serviceable rope.

*Reg. appl. for

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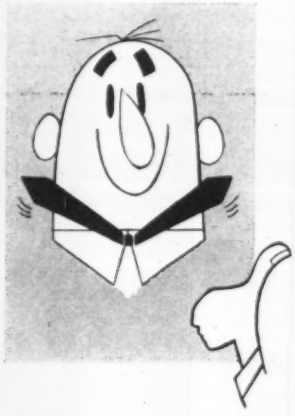
Metalworking Management Expects:



Sales Volume To Rise 4.4% in Last Half

LAST HALF vs. FIRST HALF, 1958:

55.1% Expect Increase
26.5% No Change
18.4% Expect Decrease

But Dollar Volume for Year 1958 Will Show 5.6% Decrease from 1957

24.7% Expect Increase
17.3% No Change
58.0% Expect Decrease

METALWORKING will feel recession pains the rest of this year, but recovery is in sight.

That's the belief of metalworking managers participating in STEEL's midyear forecast. The editors queried 5000 general managers of metalworking plants to find out what they expect in sales, profits, employment, prices, costs, and expansion at their plants.

Patient Will Improve—They predict: 1. Metalworking will sell 4.4 per cent more dollars worth of goods in 1958's second half than in the first. 2. Total 1958 dollar volume will be only 5.6 per cent less than that of record 1957.

But the plant managers expect a relapse in net profits after taxes in the second half: Look for them to be 8.6 per cent below what they were in 1957's last half.

Four of five respondents think their second half dollar sales volumes will be as good or better than those of the first half. More than two-fifths predict their volume for the year will be as large or larger than it was in 1957. And the greater part of that increase is expected to come from an improvement in physical volume, not inflation.

Smaller Plants Optimistic—Plants employing 100 to 499 look for a 5.4 per cent sales increase in the last half; plants employing 20 to 99 expect a 4.2 per cent advance; those employing 500 or more anticipate a 2.8 per cent improvement. For the year, the big plants also expect a poorer showing (percentagewise) than the smaller ones.

DOLLAR VOLUME CHANGES Analysis by Industries	LAST HALF 1958 vs. FIRST HALF	YEAR 1958 vs. YEAR 1957
S.I.C. 33—Primary Metals	+4.3%	−10.3%
S.I.C. 34—Fabricated Metal Products	+5.5%	− 5.6%
S.I.C. 35—Machinery (except electrical)	+4.0%	− 7.7%
S.I.C. 36—Electrical Machinery	+3.3%	− 1.0%
S.I.C. 37—Transportation	+2.1%	− 5.6%
S.I.C. 38—Instruments, Related Products	+1.4%	+ 0.5%
Other Metalworking Groups*	+7.4%	− 2.5%

*S.I.C. 19, 25, and 39.

Prices Hold—With Exceptions

Shackled by a buyer's market, three of four managers figure they'll have to sell their products at or below present prices. Exceptions:

Metalworking Management Expects:

Steelmakers say they'll boost their charges after the July wage increase. Makers of instruments and related products expect to hike prices about 1 per cent. Scattered advances are expected in other categories. Some managers who report they'll hold prices at present levels qualify their answers: They say they'll have to mark up prices a little if cost hikes are substantial.

Some Prices Drop—Three out of 20 plants report they'll reduce their charges. Most of them make machinery or fabricated metal products. Price cutting, widespread in recent months, is expected to continue—but on a lesser scale. Rugged price competition was listed by many managers as a major problem.

More Capacity on Way

One out of five metalworking plants will take on more capacity in 1958's last half. New plants will be erected by 3.1 per cent of respondents; 4.7 per cent will build additions; 13.7 per cent will purchase new equipment.

"Even though we don't expect enough orders to meet our present capacity, we're going to buy new equipment. We figure it will slash our manufacturing costs and help preserve our profit structure."

That comment by a Wisconsin foundry manager is typical. A maker of screw machine products adds: "Now is a good time to analyze our production facilities, replace old machines that aren't too efficient, and reorganize our lines to cut costs. Then when demand improves, we'll be ready for it."

Tax Laws Hamper Growth—A large number of respondents comment that capital shortages will hold back their expansion plans. A remark by a Californian is typical: "Under our present depreciation system, the only way we can buy new equipment is to take most of the money from profits. Since our profits are now squeezed terribly, we'll have to postpone our growth plans indefinitely." Many managers assert depreciation reform would be a fast recession cure.

Predict Higher Employment

The five major metalworking groups will add about 100,000 production workers in the last half. Plants employing 100 to 499 look for the biggest employment gain—4.1 per cent. All categories but nonelectrical machinery predict a gain. Transportation equipment plants will offer the most job opportunities; they plan to expand employment by 9.4 per cent.

Skilled Help Supply Good—Only 3.8 per cent of respondents (vs. 11.6 per cent a year ago) expect their output to be curtailed by a shortage of skilled workers. A few respondents believe they'll have trouble finding high quality men, though.

Costs Will Climb More

More than half the plant managers predict their unit cost of manufacturing will hit a new high in the last half. Plants employing 500 or more foresee the biggest increase —1.6 per cent. Over-all, a gain of 1.4 per cent is expected.

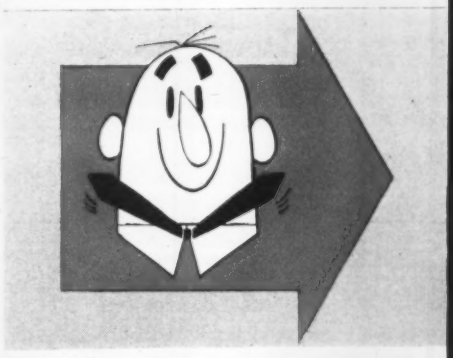
Heavier costs will result primarily from higher wage rates which take effect in many plants around midyear. Many boosts are automatic, coming from provisions in long term contracts. They influence higher grants to other workers. The situation leads many managers to complain about "labor irresponsibility." They believe wage hikes are too large for a recession period.

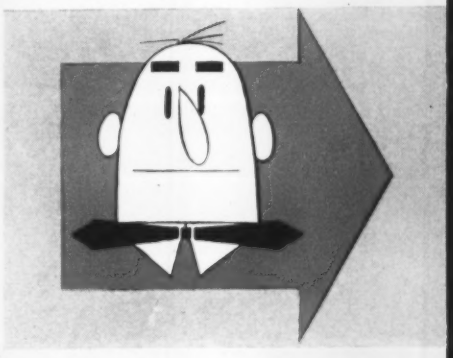
Strong words are used by some respondents in talking about wage increases without corresponding gains in productivity. Example: An Indiana electronics supplier says: "Companies should take a strike rather than grant unions their outrageous demands that only accentuate the recession."

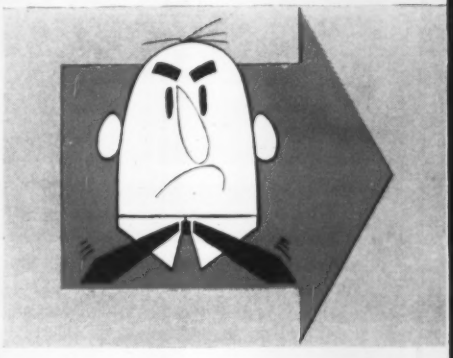
The second major cost factor will be the steel price hike expected this summer. Service charges will rise.

The Profit Picture

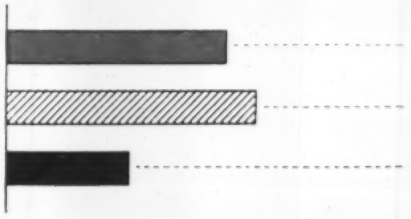
Despite expected higher manufacturing costs, the plant managers







Employment Will Rise 2.2% in Last Half of '58



37.3% EXPECT INCREASE

42.1% NO CHANGE

20.6% EXPECT DECREASE

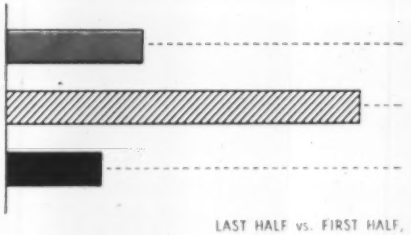
LAST HALF vs. FIRST HALF, 1958

ANALYSIS BY INDUSTRIES	CHANGE EXPECTED
S.I.C. 33—Primary Metals	+1.5%
S.I.C. 34—Fabricated Metal Products	+2.7%
S.I.C. 35—Machinery (except electrical)	—0.1%
S.I.C. 36—Electrical Machinery	+1.2%
S.I.C. 37—Transportation	+9.4%
S.I.C. 38—Instruments, Related Products	+1.1%
Other Metalworking Groups*	+5.1%

*S.I.C. 19, 25, and 39.

Selling Prices Expected To Stabilize

(See Page 49 for exceptions)



23.5% EXPECT INCREASE

60.5% NO CHANGE

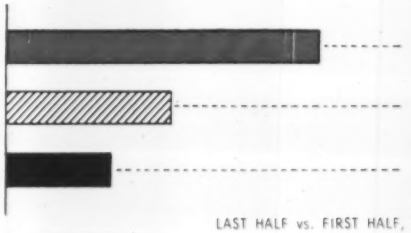
16.0% EXPECT DECREASE

LAST HALF vs. FIRST HALF, 1958

ANALYSIS BY INDUSTRIES	CHANGE EXPECTED
S.I.C. 33—Primary Metals	+0.6%
S.I.C. 34—Fabricated Metal Products	—0.1%
S.I.C. 35—Machinery (except electrical)	—0.1%
S.I.C. 36—Electrical Machinery	—0.2%
S.I.C. 37—Transportation	NONE
S.I.C. 38—Instruments, Related Products	+0.9%
Other Metalworking Groups*	+0.3%

*S.I.C. 19, 25, and 39.

Unit Cost of Manufacturing Will Climb 1.4%



53.6% EXPECT INCREASE

28.6% NO CHANGE

17.7% EXPECT DECREASE

LAST HALF vs. FIRST HALF, 1958

ANALYSIS BY INDUSTRIES	CHANGE EXPECTED
S.I.C. 33—Primary Metals	+1.2%
S.I.C. 34—Fabricated Metal Products	+1.7%
S.I.C. 35—Machinery (except electrical)	+1.4%
S.I.C. 36—Electrical Machinery	+1.3%
S.I.C. 37—Transportation	+1.9%
S.I.C. 38—Instruments, Related Products	+0.6%
Other Metalworking Groups*	+1.0%

*S.I.C. 19, 25, and 39.

Manufacturing Capacity Will Be Boosted 1.7%

20.7% EXPECT TO EXPAND

Of Those: **14.7%** WILL BUILD NEW PLANTS

22.1% WILL BUILD ADDITIONS

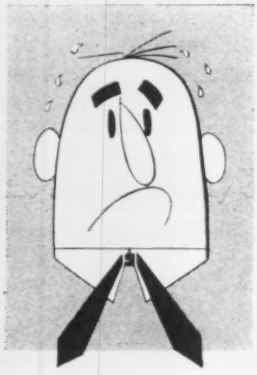
66.0% WILL BUY EQUIPMENT

LAST HALF vs. FIRST HALF, 1958

ANALYSIS BY INDUSTRIES	WILL EXPAND	OF THOSE EXPECTING TO EXPAND: Will Build New Plants	Will Build Additions	Will Buy Equipment
S.I.C. 33—Primary Metals	18.9%	17.6%	20.8%	79.1%
S.I.C. 34—Fabricated Metal Products	18.8%	11.9%	31.4%	66.8%
S.I.C. 35—Machinery (except electrical)	19.0%	15.3%	15.4%	68.8%
S.I.C. 36—Electrical Machinery	24.4%	21.8%	12.6%	47.2%
S.I.C. 37—Transportation	26.2%	13.6%	35.4%	70.3%
S.I.C. 38—Instruments, Related Products	23.9%	26.2%	42.3%	52.5%
Other Metalworking Groups*	25.5%	6.7%	16.1%	67.7%

*S.I.C. 19, 25, and 39.

Compared with Last Half, 1957 . . .



Profits Will Slide 8.6% in Last Half '58

22.1% Expect Increase
20.7% No Change
57.2% Expect Decrease

PROFITS AFTER TAXES—Analysis by Industries	CHANGE EXPECTED
S.I.C. 33—Primary Metals	—13.7%
S.I.C. 34—Fabricated Metal Products	—10.5%
S.I.C. 35—Machinery (except electrical)	— 9.3%
S.I.C. 36—Electrical Machinery	— 4.3%
S.I.C. 37—Transportation	— 5.0%
S.I.C. 38—Instruments, Related Products	— 2.3%
Other Metalworking Groups*	— 4.7%

*S.I.C. 19, 25, and 39.

look for second half profits per sales dollar (after taxes) to average 5.4 per cent (vs. 5.3 per cent in '57's last half). That advance, in the face of low volume operations, will result from metalworking's vigorous campaign to trim nonmanufacturing costs.

Cuts in production costs are begining to show, too. Last year, the plant managers predicted a 3.7 per cent rise in the unit cost of manufacturing; this year, they look for an increase of only 1.4 per cent. Encouraging note: Recent cost trimming will pay off even more when metalworking resumes high volume operations.

Who'll Suffer Most—Only 22.1 per cent of the plant managers look for higher profits in 1958's second half than in 1957's like period. Nearly six out of ten look for a decline.

Plants employing 500 or more expect a 10.2 per cent dropoff; those employing 100 to 499 foresee an 8 per cent decline; the smaller plants expect profits to sink 8.6 per cent.

Why Profits Drop—Wages are climbing much faster than productivity, the plant managers say. Costs of materials, transportation, and services also are rising. They eat into profits because keen price competition precludes passing them on to the customer. Most managers agree that competition is the toughest it has been this decade. They complain that companies are moving into unfamiliar fields where they underbid established shops. Some complain that even old line producers are cutting prices to keep their shops working. "You can't raise quotations under those conditions," laments a western foundry manager: "You absorb higher costs and watch your profits go to hell."

Most managers figure the only avenue to respectable profits is in paring expenses to the core. They say these areas are getting attention: 1. Replacement of old facilities with new, more efficient ones. 2. Careful examination to find operations that can be combined, deleted, or accelerated. 3. Elimination of ineffective salesmen, supervisors, and office personnel. 4. Reduction of paperwork. 5. Elimination of overtime.

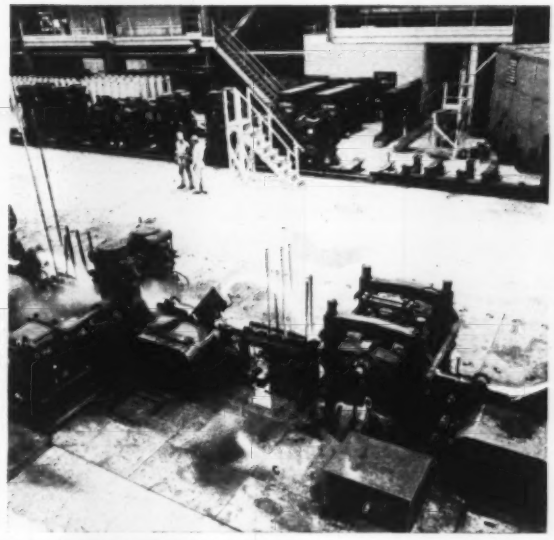
Imports Cause Trouble

Foreign products ranging from barber chairs to instruments continue to flood American markets, say the managers. Makers of stainless steel tableware, flashlights, and surgical instruments list foreign competition as their number one problem. Machine tool builders, tool and die shops, and producers of cameras, jewelry, and watches also are feeling the pressure. Foundries and steelmakers report that imports are threatening to cut deeper into their domestic business.

New Products Deluge Buyers

High expenditures for research and development are paying off in a host of new products which will be offered in the coming six months. Several managers say they're pinning their sales hopes largely on such introductions. Others say they've redesigned their products for cheaper production. Resulting lower prices, they believe, will boost sales substantially.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*



A NEW BAR MILL at South Chicago, Ill., represents an $18-million investment by Republic Steel Corp. Vertical looping, shown above, represents a "unique principle in bar mill design," Republic announces

Republic Opens Bar Mill

REPUBLIC STEEL CORP. unveiled an $18-million bar mill at its South Chicago plant. Part of Republic's $200-million expansion program being completed this year, it will roll both alloy and carbon steel products.

Incorporated are unique design and operation features, including:

Straightaway Operation—Using the continuous mill principle, the steel being rolled is always moving in the same direction during its trip through the mill.

Alternate Horizontal and Vertical Rolling: Layout of the roll stands makes possible exertion of necessary pressure on all sides of the steel without twisting or turning it. This minimizes deformation of the bar.

Vertical Looping: Since the speed of the steel leaving one stand is greater than the speed at which it can enter the following stand, it must be slowed or looped to keep it from piling up. On most mills, steel is looped to one side or below the mill. On Republic's new mill, it's looped vertically above the mill while stand speeds are synchronized.

Antifriction Bearings: Operating in an enclosed oil bath, four antifriction mill bearings in each stand give rigidity to the mill housings. This affords minimum roll deflection and close control of the steel.

Speed—The heating furnace can provide enough steel to make up to 85 tons of finished product per hour. Maximum delivery speed of the mill is 3000 fpm (about 35 mph).

Each of the 16 mill stands is individually motor driven. Horsepower ranges from 300 on the motor for the first stand to 800 on the last.

Production—The mill can produce 0.375 to 1.25 in. rounds and the equivalent sizes of squares, hexagons, special selections, concrete reinforcing bars, and 1 to 4 in. wide flats.

New Pipe Mill for J&L

A NEW PIPE MILL completes Jones & Laughlin Steel Corp.'s ten year, $200 million expansion program at Aliquippa, Pa. It's the second of a pair of continuous weld mills representing a $17-million investment. J&L completed the first in 1957.

With customers demanding, and getting, premium quality steel, the mills prove again that plant modernization is a must even in periods of slack demand. The Pittsburgh steelmaker's facilities replace two buttweld mills constructed in 1926.

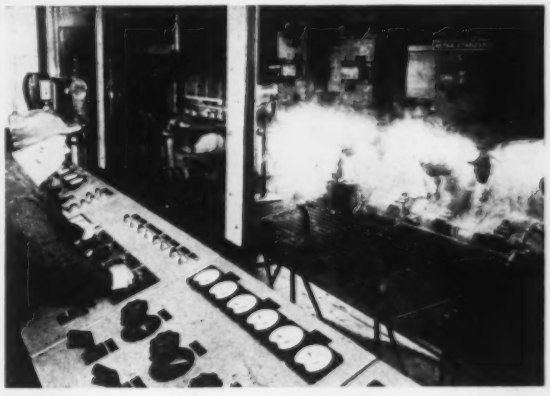
J&L sells small-diameter pipe to plumbing and heating industries and oil and gas distribution lines. Other uses include sprinkler systems, air conditioning, prime electrical conduit, refrigeration, and conductors for steam, water, and air.

Requirements Are High—Buyers want sound weld quality, freedom from heavy scale on outside and inside surfaces, and physical characteristics that permit coiling and bending, J&L sales officials point out. Says John E. Timberlake, vice president, sales: "Advanced design in the new mills assures high quality."

J&L's newest mill produces welded pipe in a nominal size range of 1¼ through 4 in. Skelp comes from a 44 in. hot strip mill at the same plant. It passes through a furnace, to be formed in a series of rolls. Skelp edges, heated to 2450° F, are forced together in the welding section. In the photograph below, a worker supervises operations of welding and forming stands from the operator's pulpit.

The corporation adds that material handling is completely automatic in both mills. All transfers of skelp are carried out automatically from the time it enters the welding furnace until it reaches hydrostatic testers in form of pipe.

Quality Check—Precision straightening and a series of inspections are additional guarantees of quality. A new Schloemann tester hydrostatically checks five tubes simultaneously. Crush tests check soundness of the weld.



A NEW PIPE MILL at Aliquippa, Pa., rounds out a $200-million growth program for Jones & Laughlin. This mill is one of a pair costing $17 million. Here's a view of welding and forming stands

Alighting from a Russian train is Dr. Earle C. Smith, director of research, Republic Steel Corp. Dr. Smith and the rest of the AISI group rode for 14 hours on the 260-mile trip from Novosibirsk (in central Siberia) to Stalinsk

F. M. Rich, general manager, Inland Steel Co.'s Indiana Harbor Works, East Chicago, Ind., stands before a scale model of a blast furnace in a permanent Moscow industrial exhibition. This model is typical of visual aids Russia uses to educate the public about industrial operations

It'll Take Years for Russia

WHAT will happen in the economic race between the world's two most powerful nations over the long pull is anybody's guess. The short term outlook is clearer: The Russians won't be able to catch up with us.

Change in Tactics—In adopting their sixth 5-year plan in February, 1956, they hoped to expand steel ingot capacity by 25.6 million net tons to 75 million tons by the end of 1960 (vs. our 141 million tons now).

But that goal will not be met. In January, 1957, the Soviets announced that the program was falling behind schedule. Four months later, the iron and steel ministry was dropped and management was given to the newly formed economic councils. Shortly after that the five-year plan itself was scrapped. Now all programs will be for the long term and revised from year to year.

New goals (for seven years through 1965) supposedly will be announced within three months. Pending that event, it is revealing to note the original plans for 1960. (They're taken from a detailed report published by the USSR.)

Emphasis on Technology—The Soviets were counting on 12.1 million tons of expanded capacity to come from better utilization of present facilities and 13.5 million tons from new construction.

Technical advances planned included the large scale use of oxygen, both for flame enrichment and for blowing through water-cooled tuyeres installed in open hearth roofs. Eighteen new oxygen generating plants were scheduled to supplement the two now in use. By 1960, 40 per cent of all steel, including converter steel, was to be made with oxygen.

At the end of 1955, furnaces with chrome-magnesite roofs were making 60 per cent of all open hearth steel. Faster heats and longer campaigns have prompted them to switch all open hearths to this type roof.

The plan called for blast furnace capacity of 58.3 million tons. Of the 22-million-ton increase, 7.7 million tons were to come from present furnaces through the use of self-fluxing sinter, high top pressure (up to 1.7 atmospheres), the addition of steam, and higher blast temperatures.

The 1960 goal was for 80.3 million tons of sinter capacity, two and a half times more than they had in 1955. Listed were 58 new sinter lines with belt areas of 200 square meters each, vs. 50 to 75 square meters now.

More Electric Steel—A sharp increase in electric furnace steel capacity was slated. In 1955, production was only 1.9 million tons. The projection was for 5.3 million tons in 1960. Furnaces of 200-ton capacity with electromagnetic stirrers were to be used.

Expansion of rolling mill capacity was to be accomplished through the installation of new mills and rebuilding present equipment. Emphasis was on continuous strip mills and cold reduction units. At both Magnitogorsk and Kuznetsk, continuous casting machines were planned to eliminate blooming mills.

Mining Is Pushed—The report notes that the lag in mining development has retarded rapid expansion of the steel industry. The pressure is on for the development of new iron ore mines. (The goal: Annual capacity of 92 million tons.) New deposits slated to be tapped are in Kazakhstan, the Urals, and

STEEL's editor-in-chief, Irwin H. Such, and Boris N. Zherebin, director, Kuznetsk steel plant in Stalinsk, Siberia, walk through a park where Russian steelworkers can spend their holidays

Kenneth C. McCutcheon, consultant to Armco Steel Corp., walks down steps outside a Russian "house of culture" in Chelyabinsk in the Urals. Such buildings feature gyms, movies, exhibits, classrooms, and pictures of honored workmen

To Catch Up

in Eastern Siberia. New mines also were to be developed in the Kursk magnetic anomaly and the Krivoi Rog basin in Southern European Russia.

Iron ore reserves in the Kustenai Region are reported to be larger than those at Magnitogorsk. This area, the report says, may become the chief supplier for Ural plants and the Kazakhstan Works. A new concentrating plant will have a capacity of 6.2 million tons a year.

Where They're Building — The Russians learned during World War II that plants back of the Urals were safest, and that is where most of their new construction is going. One large plant is earmarked for the Irkutusk Region in Siberia and another for the Krasnoyarsk Territory. A steel plant will be completed at Orsk-Khalilovo. A large installation at Karaganda will include two blast furnaces and a strip mill. A ferroalloy plant will be built at Pavlodar.

(Editor's note: The findings of the U. S. delegation of steelmen that visited Soviet steel plants in June will be released soon. The foregoing report is based on information published in the Soviet press.)

Conference-loving Russians like to meet with their guests around T-shaped tables heaped with fruit, carbonated beverages, cigarets, and chocolate bars. Here (Sverdlovsk in Urals) the U. S. delegation flanks such a table for a conference at the Mechanobr Institute for Mining Research. Pictured (from left to right): Dr. Michael O. Holowaty, chief research engineer, Raw Materials Activities, Inland Steel Co.; Norwood B. Melcher, chief, Pyrometallurgical Laboratory, Bureau of Mines, U. S. Department of the Interior; Michael F. Yarotsky, division superintendent, U. S. Steel Corp.'s South Works, Chicago; F. M. Rich, general manager, Inland Steel's Indiana Harbor Works; Stephen M. Jenks, administrative vice president, Central Operations, U. S. Steel Corp.; Floyd S. Eckhardt, assistant general manager, Lackawanna Plant, Bethlehem Steel Co.; John A. Stephens, deputy chief of the AISI delegation and vice president, U. S. Steel Corp.; Edward L. Ryerson, AISI delegation chief and former chairman of Inland Steel

Congressional Goal: Home in 45 Days

YOUR ELECTED representatives in Washington have plenty of work to finish in the next 45 days if they're to get home for fall campaigns. They've unofficially agreed that Aug. 15 is H-day (home day) because both parties want at least ten weeks in which to guide voters and also to allow sufficient time for constituents to forget anything they didn't like about this session.

Both parties have some healthy explaining to do: Reciprocal trade is just one example. While the House passed a five-year extension of the act, hearings are still going on in the Senate. Neither liberal traders nor protectionists are too happy with the bill which allows traiffs to be increased 50 per cent above the Smoot-Hawley level or allows them to be cut 25 per cent below current figures.

At stake in the fall elections is the makeup of the 86th Congress. It will be the last under the Eisenhower administration, and could swing the 1960 Presidential election either way through its actions. Some Republican strategists are counting on a hog wild shift to the left by a Democrat-controlled 86th which would, in turn, foreshadow a dramatic return to conservatism by 1960.

Legislative Calendar Is Full

Here's a rundown of legislation important to metalworking that Congress must handle: 1. Reciprocal trade: The Senate will probably tack on some protectionist amendments which the House must accept or reject in conference among leaders of the two bodies. 2. Minerals aid: The Senate will probably pass a version of Interior Secretary Fred Seaton's stabilization and stockpile program, but the House will fight it. 3. Small business aid: Expect leaders of both houses to battle efforts to grant extensive measures of tax and other relief (to follow through with their agreement for no important tax revision this year). The outlook is that some help will be given—probably more than the leaders want. 4. Labor: The Senate bill isn't tough, but the House is reluctant to face its labor constituents with anything approaching "regulation." 5. Mutual security: While authorizing legislation has been approved, appropriations must still be agreed to. 6. Debt ceiling: The Treasury soon will come to Congress with an appeal to boost it permanently to $300 billion (it's temporarily at $280 billion). 7. Railroad aid: A version of the Senate bill should pass the House. 8. Atomic energy: The administration is backing a plan to build six plants in Europe.

Joint Research by Small Firms

Sen. Jacob Javits (R., N. Y.) wants small firms to pool their research resources to get more Pentagon business. With seven other senators, he has introduced a bill to allow this, subject to approval by the Justice Department and periodic review to show that no antitrust statutes are violated. The bill calls for the Small Business Administration to loan up to $250,000 to such pools; $20 million would be available.

As missile technology gains momentum, more legislators are becoming concerned about small business' declining share of military business. In March, small firms obtained only about 9 per cent of contracts awarded, vs. over 17 per cent in February. Noting a falloff in the first nine months of fiscal 1958, the Defense Department says that more aircraft and missile procurement and a rising number of R&D contracts are the main causes. Construction and soft goods procurement dropped from 18 per cent of the procurement dollar in the first nine months of fiscal 1957 to 14 per cent in the same period this fiscal year.

Legislators also point out that the final rush to award contracts before the end of the fiscal year (today, June 30) hurt the chances of small firms tremendously.

Seaway Tolls Are Set at Last

Public hearings on proposed tolls for the St. Lawrence Seaway will be held Aug. 6 in Washington. Included: An assessment of 6 cents per gross registered ton of a vessel, plus 42 cents per ton of bulk cargo and 95 cents per ton of general cargo for passage from Montreal to Lake Erie. Partial transit of the seaway calls for reduced tolls.

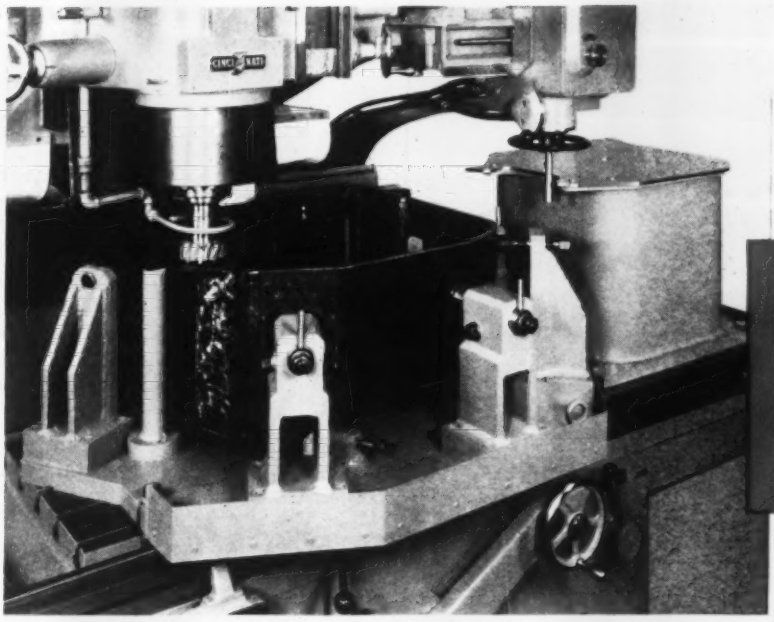
The St. Lawrence Seaway Development Corp. estimates 25 million tons of cargo will pass through the seaway in its first year of operation and 50 million tons annually by 1968. The tolls, says the corporation, take into account a ten-year developmental period during which annual revenue may not meet requirements for maintenance, interest charges, and debt payoff. The schedule allows the seaway to be paid for by the year 2008 (as recommended by Congress).

Judiciary Committee O.K.'s S.11

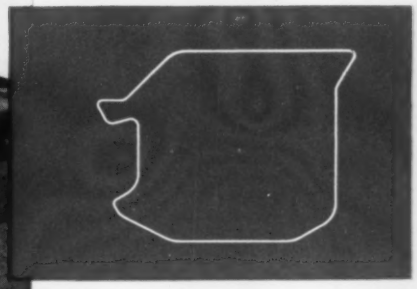
The Senate Judiciary Committee last week passed S.11 (which amends the Robinson-Patman Act) but limited it to food, drug, and cosmetic sales. Sen. Estes Kefauver (D., Tenn.), the bill's sponsor, wanted it to apply to all industries. He'll fight for such application if the bill gets to the Senate floor this session.

25″ x 33″ Profile

Milled Automatically on CINCINNATI 28″ VERTICAL HYDRO-TEL



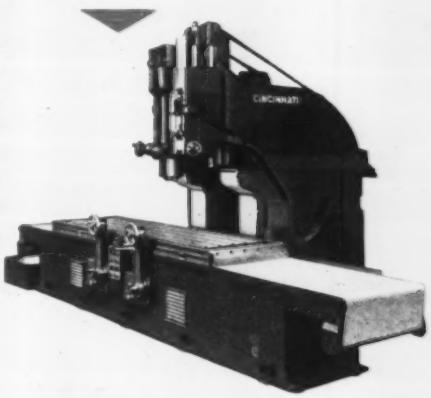
Entire profile edge of large weldment is automatically milled in one continuous cut, on this CINCINNATI 28″ Vertical Hydro-Tel Milling Machine, equipped for 360° Automatic Profile Milling. Note how machine handwheels can be swiveled out of the way to accommodate overhang of large fixtures.



Variety of curves in the above template is scanned automatically by the tracing finger extending from the Hydro-Tel's 360° Automatic Profile unit.

There are two ways to mill large two-dimensional profiles. The hard way, when the operator uses two hands to control table and cross traverse, while keeping his eyes glued on the work and cutter. Or the easy low-cost way, automatic profile milling on a CINCINNATI 28″ Vertical Hydro-Tel like the one illustrated here. This equipment greatly simplifies the operator's job. After he loads the fixture the automatic profiling unit takes charge of the operation, scanning the curvature of the template while automatically controlling the table and cross feed to mill the exact profile of the template. ¶ This production idea can be extended to profile mill two, three or four parts at one time, with the corresponding two-, three- or four-spindle head. There's no floor under costs when you plan your milling operations on a CINCINNATI Hydro-Tel. Cincinnati builds four machines of this type: 16″, 28″, 30″, 36″. All are "spec'd" in Sweet's Machine Tool File. Complete data for the 28″ size may be obtained by writing for catalog No. M-1773-3.

CINCINNATI 28″ Vertical Hydro-Tel Milling Machine. General-purpose style illustrated. Can be equipped for die sinking and/or automatic profile milling, or multiple spindle production milling. Catalog No. M-1773-3.



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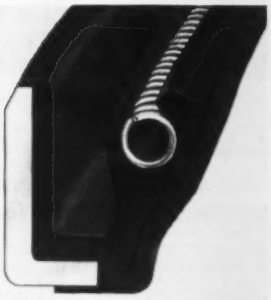
GARLOCK KLOZURE 142A—designed primarily for steel mills to seal surfaces perpendicular to shaft such as at end of mill roll. Acts as initial seal, keeps excessive water, scale, and other foreign matter from bearing oil seals. Available in any length for any diameter over 12″. Comes in straight strip with strap for fastening. Maximum surface speed 5000 fpm, temp. 250° F. constant.



GARLOCK KLOZURE 2782—Positive oil seal protection for steel mill bearings. Garter spring holds Buna-N sealing element in contact with shaft. Precision formed case molded to sealing element protects seal from damage, and provides a press fit for proper installation. Available normal to high speed use on shafts to 48″ dia., temperatures to 250° F, and for applications involving low pressure differentials.

It's easier to find the KLOZURE Oil Seal for your job because Garlock has one of the largest stocks available. Moreover, for any sealing problem, you can choose from the Garlock 2,000 . . . two thousand different styles of packings, gaskets, and seals. The only complete line. Call your Garlock representative or write for KLOZURE Catalog 20.

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Rubber Parts: Costs Down

Automated molding process enables Ohio Rubber Co. to offer close tolerance components at less than premium prices. Natural or synthetic rubber can be used

HERE'S good news for volume users of small rubber parts who haven't been able to afford close tolerances. Ohio Rubber Co., a division of Eagle-Picher Co., says it has an automated molding process that slashes the cost of dimensional accuracy.

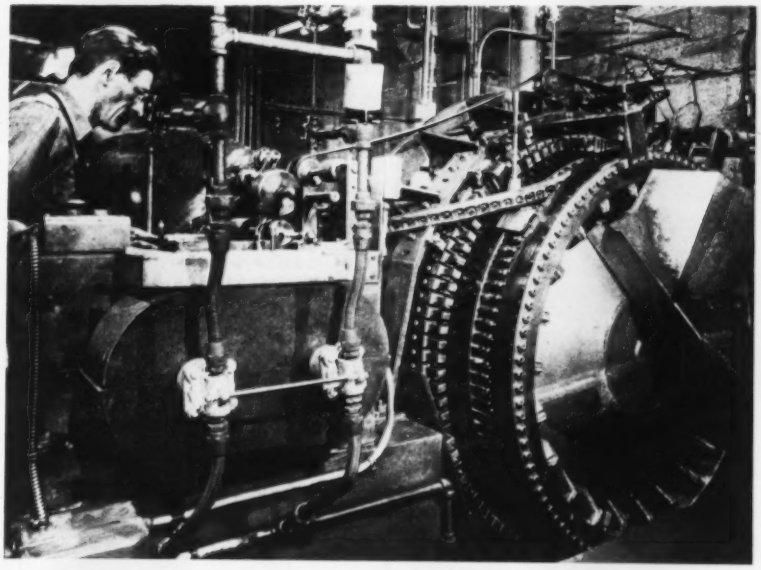
Parts in production at its Stratford, Conn., plant include: Seals for auto shock absorbers and universal joints, washers for water conditioner quick-connectors, end caps for electric condensers, aerosol container valve parts, engine valve stem deflectors, and fastener components.

Specifications — Generally, diameters can be held within plus or minus 0.003 to 0.005 in. A critical dimension on a part in production is accurate within plus or minus 0.0025 in. A part with a thin section and a fairly large diameter has surfaces which are parallel within 0.003 in. The company says accuracy is substantially the same for fixed or closure dimensions because flash is precisely controlled.

With present equipment, maximum dimensions are about $1\frac{1}{4}$ in. (diameter) by 1 in. (thick). Natural or synthetic rubber compounds can be handled. The company says it can make a wide variety of parts with materials ranging from 45 to 95 (durometer) in hardness.

Case History — Culligan Inc., Northbrook, Ill., formerly made washers by slicing discs from extruded lengths of rubber. Accuracy wasn't entirely satisfactory, but precision molded products were expensive. Ohio Rubber says it is making the part with close tolerances at a substantial saving in cost.

Cost Cutting—Automation is the key to the process. It made the use of single cavity, self-registering molds economically feasible. (Normally, their production rate is low.) Each of Ohio Rubber's machines can turn out as many as 200,000 pieces a day.



CONTINUOUS RUBBER MOLDING MACHINE at Stratford, Conn., makes small parts to close tolerances. Ribbon of compound from mill can be seen traveling to molds across top of photo and returning across the center. Molds open at upper right, dropping pieces into chute which leads to conveyor

Manufacturing Techniques — An operator loads stock onto plasticizing rolls which feed it into the rotary molding section of the machine. Individual molds on a rotating wheel take material through the molding and curing stages, discharge the finished part and return for more stock in a continuous cycle. Automatic controls regulate molding time, temperature, and pressure.

The process is based on methods and equipment originated by Gora-Lee Corp., a firm purchased by Ohio Rubber in 1957.

Permanent SBA Urged

The three main problems facing small business today are availability of credit, availability of equity capital, and tax reduction, in the opinion of Sen. Edward J. Thye (R., Minn.).

He told members of the Small Business Forum of American Management Association in New York that he believed extension of the Small Business Administration would help solve credit problems.

"SBA must be established as a permanent agency so that it will attract more competent personnel, to enable it to work more effectively in the area of procurement assistance, and so that our banking institutions will be more apt to participate in the SBA loan program," he said.

"Some system for providing long-term financing for small firms is urgently needed," he reported, at the same time admitting that a difference of opinion existed as to what legislation was needed to supply sources of capital. In discussing tax relief, he commented: "I am confident that legislation will be enacted in the next three months which will alleviate the financial pressures upon small business firms."

Lukens Markets Electrodes

Lukens Steel Co., Coatesville, Pa., will begin marketing welding electrodes.

Lukens officials say the new service will have several advantages for customers, including: They will be able to obtain electrodes matched to its range of steel plates and get co-ordinated service.

Reid-Avery Co., Baltimore, reportedly will make the electrodes to Lukens' specifications.

Operations Research Solved These Problems

With the aid of Case Tech's OR group . . .

Oster Mfg. Co., Cleveland, selected optimum new products.

American Radiator & Standard Sanitary Corp.'s Youngstown Kitchen Div., Salem, Ohio, scheduled production to maximize output.

Cummins Engine Co., Columbus, Ind., and Warner & Swasey Co., Cleveland, developed production scheduling and inventory control systems.

An electric utility determined when new equipment should be purchased.

General Electric Co.'s Lamp Div. decided how many and what type of accounts a salesman should handle (and devised a way to show when the number should change).

A midwestern firm picked a plant site.

M. A. Hanna Co., Cleveland, developed procedures to find ore deposits (and estimate their size).

A steel company found the best ore blend.

A metalworking plant chose the best available steel forming facilities.

Chesapeake & Ohio Railway Co. prorated revenues from interline shipments.

A manufacturer determined when extra shifts should be added.

General Electric Co.'s Lamp Div. set up a five-year plan. Included: A new organizational structure, new operating policies, new control and communication procedures, a plan for acquisition and development of resources, objectives for each function and product.

Stalemated? Try This Move

More than 400 companies are using this scientific approach to study questions involving many variables, complicated relationships, or conflicting objectives

ARE YOU having trouble scheduling production? Controlling inventories? Picking plant sites? Selecting profitable new products?

Companies with such many-sided problems are turning to operations research.

What It Is—Opsearch (OR's nickname) is a scientific way of solving management problems. It tackles issues involving many variables, complicated relationships, or conflicting objectives. (See above.)

By borrowing tools and methods from the sciences and building precise models of the problem area, opsearchers can pinpoint the best available solution.

OR is done by teams of scientists —mathematicians, physicists, economists, engineers, philosophers— who can generate a large number of possible solutions because of their different backgrounds. They then determine which one will give the best results in terms of the objective (boost profits, cut costs, hike production, minimize downtime). That's done by applying the alternatives to a model of the problem.

Opsearch has been used to solve problems ranging from finding the number of stewardesses needed by a major airline to setting up a five-year plan for General Electric Co.'s Lamp Div.

When It's Needed—You'll want to use OR if: 1. You want a more accurate basis than intuition or judgment for making important decisions. 2. You want to upgrade your entire operation rather than merely apply stopgap measures to immediate problem areas. You must be willing to recess one or two top-notch men from their routine duties to work on the project. Chances are that a company with $5 million or more gross sales can set up its own OR program. But smaller companies can benefit from OR, too. Case Institute of Technology's Dr. E. Leonard Arnoff believes that small firms can derive great benefits by setting up a program on an industry-wide basis—perhaps through associations. The British Iron & Steel Association has found the approach to be fruitful.

Dispelling Rumors—Many beliefs about opsearch are false. For example, a lot of people think it can't be done without a huge, expensive computer. Says Dr. Arnoff: "Our experience has been that computers are needed in only about 10 per cent of the cases. At other times, they're helpful; but quite often, they're only a sales gimmick. However, large companies with permanent OR groups have often found it wise to lease or purchase them for OR and other uses."

Dr. D. B. Hertz, manager, Operations Research Dept., Arthur Andersen & Co., New York, points out: "Managers approach operations research with feelings ranging

from awe to suspicion." Yet more than 400 companies use OR, estimates Dr. Arnoff. About half have their own staffs. The rest employ consultants, research foundations, or universities.

How OR Works—The OR team gathers all pertinent facts about alternate solutions to a problem. They apply the solutions to a model of the problem area to find the best one. Dr. Arnoff says opsearchers take these six steps: Formulate the problem (the most difficult phase), construct a model, solve it, test it, implement the results, control the solution. Examples of OR's thoroughness:

1. It doesn't merely concentrate on the immediate problem area but goes back through the system to find any hidden causes. For example, a company suffered shortages at the assembly line despite high inventories. An OR team found that the major causes were an inefficient order processing system (time was cut 70 per cent) and lack of a well-organized file of available components. (Engineers designed new parts unnecessarily. A new communication system solved that.)

2. Models include all pertinent aspects of the operation. They're usually mathematical representations. (Calculus is the opsearcher's most important tool.) They can also be symbolic as in gaming (see footnote at right) or analog where properties of a computer represent those of the plant.

How You Get OR—Three main routes to establishing a program:

One Way—Contact a university that offers the service (examples: Case and Ohio State). Such groups solve your most pressing problems while training your men to handle subsequent projects. They will normally report to a steering committee (three to five managers in varying functions) that reports to the executive committee.

A good staff includes: 1. At least one well-trained opsearcher. He will probably have an engineering, math, or science degree, and experience in using opsearch methods and tools (see footnote). 2. At least one man with a thorough knowledge of the company—its problems, limitations, finances, policies, personnel. His status should be such that he will have the respect of all persons directly affected by the OR effort.

Another Way—Enlist a consultant (research foundations, management consulting firms). Some will train your men while working on your problem; others offer only spot help. Some companies establish a working relationship with a consultant. Consulting services cost around $250 per manday, says Dr. Arnoff.

A Third Way—Hire one or more operations research graduates. Degrees in OR or directly related fields are given by at least seven U. S. universities (Case, Carnegie Tech, Cornell, MIT, Penn, Johns Hopkins, and Ohio State).

OR Limitations — As with any young discipline, opsearch has some problem areas. The potential customer should know what they are but not let them discourage him.

Time—Opsearch is of little help in "rush decisions." Practitioners need considerable time to do research, develop the model, test it, and prove its validity. But a continuing effort will reduce the number of crash programs.

Communications—Some progress has been made in translating OR methodology into business language, but proponents admit they still have a long way to go.

Personnel — Lack of men with strong physics-math backgrounds and well-rounded business experience complicates recruitment of team members. And the scarcity of professional opsearchers makes OR an expensive, though cost-saving, approach.

Footnote to OR

Operations research is still in its formative stages. Here are five fundamental techniques which are widely used now:

Linear Programming — It determines the best allocation, or use, of limited resources. It has been employed to: 1. Lower distribution costs from factories to warehouses. 2. Improve price-volume relationships. 3. Specify a better product mix. 4. Aid sales planning. 5. Allocate production facilities.

Queuing—It develops waiting-in-line relationships (like machines awaiting a repair crew or products awaiting inspection). It finds the cost of the "queue" (wait) and compares that with the cost of building new facilities to avoid a queue.

Gaming—Related to chess, it features a board and playing pieces that simulate the problem. Within the boundaries of the company's limitations, policies, and goals (which are stated beforehand), the player manipulates the pieces until he finds the best solution. He doesn't have all possible strategies available; he has to discover them.

Its advantages: 1. The only big cost factor is the players' time. 2. Unexpected problems are uncovered. 3. Important aspects of the problem can be recognized.

Applications include: 1. Training executives. 2. Comparing one's firm with competitors. 3. Pretesting changes in organization. 4. Flow charting a production line. 5. Feasibility checking (like which components to buy).

Information Theory—By evaluating communications systems, it leads to better organizational structures and trims costs.

Value Theory — By assigning numerical significance to alternatives, it finds the best answer among given solutions to a problem.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

Sets a New High in Automatic, High-Volume Production

A typical example of one Jones & Lamson approach to "automation" is this line. Here is completely automatic handling with both machine transfers and inter-machine transfers. In this line are 4 Fay automatic lathes and 1 milling and center-drilling machine. J & L machines of this type have been in use for many years in production plants throughout the world.

The simple, rugged transfers used in this line were designed, engineered and built by J & L. Control combinations are, of course, tailor-made for each individual application.

Automatic handling is also adapted to grinding operations, as shown by this J & L Model "E" Grinder (inset photo) which handles 136 steering worms per hour.

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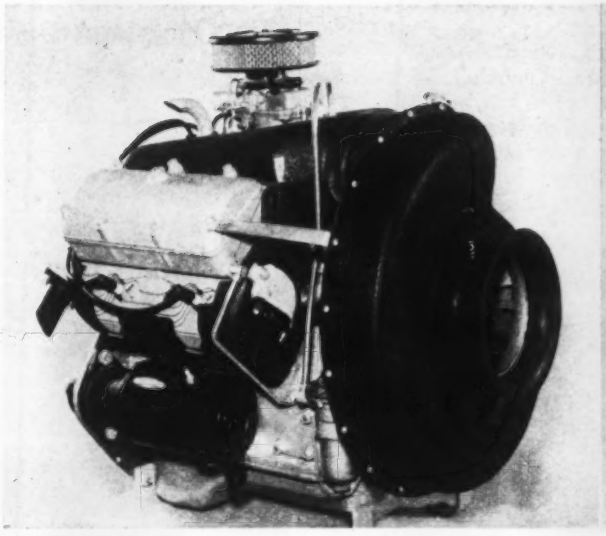

American Motors Corp.

- AMC's military job can be converted
- Willys considers a 100-hp throwaway engine

Small Firms Have Aluminum Engines, Too

Chevrolet has released tooling orders for its model. But AMC and Willys both have military contracts for utility vehicles with air-cooled, aluminum engines. Passenger use is next

CHEVROLET has released tooling orders for its air-cooled, aluminum engine. The furor caused by the Big Three's entry into this field has obscured the fact that two other manufacturers (American Motors and Willys) have already developed similar powerplants. One could be as near as GM to bringing one out for passenger cars.

American and Willys have military contracts to produce Jeeplike vehicles with aluminum engines. For AMC, it would be relatively simple to move from military to Rambler with the lightweight job. Several sources have hinted that the company may have to take this step to keep its lines competitive with small cars GM and Ford will introduce.

Company Hints — George Romney, AMC's president, points out that the engine can be used to power military vehicles or small cars. It's one of a family of engines which can be built with 2, 4, 6, or 8 cylinders. A V-4 now being tooled would be adequate for the Metropolitan or Rambler American.

The aluminum block is diecast. Cylinder bores are chrome plated 0.003 to 0.004 in. thick. Cylinder heads, covers, and timing gear housing are also designed for diecasting, which cuts machining costs.

Specs Show—The V-4 (it develops 62 hp) weighs 200 lb. Displacement is 108 cu in.; its compression ratio is 7.5:1. Bore and stroke are 3.25 x 3.25 in. Valves are in the head and the head, cylinder block, and crankcase are separate pieces bolted together. The approach simplifies manufacturing and makes for easier maintenance—a necessity for military use and a handy idea for passenger cars.

Sports car enthusiasts have eyed the V-4 as a likely powerplant, but changes in bore and stroke would be necessary for improved performance at higher speeds. The engine needs fewer modifications for economy cars. The block can be easily adapted to handle different sized cylinders to give higher compression ratios. Its 62-hp rating is higher than that of European cars (like the French Simca, English Triumph, and Renault Dauphine).

Introduction? — The engine is slated for AMC's Mighty Mite, a 1500-lb Jeeplike vehicle that can be transported by air. The initial military order calls for 250 with the first six due in about 15 months. They'll mostly be handbuilt, says AMC, but engine tooling should be ready then, if not earlier.

AMC paid for development of the engine, and legal sources say it

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should have little trouble getting Defense Department permission to run commercial production along with military orders. It looks like introduction probably couldn't be earlier than the 1961 model period.

Another Producer—Willys apparently has no such plans for its aluminum engines, but reports say a larger powerplant is under development.

Willys is producing a 16 hp, air cooled unit which is for the Mechanical Mule, a ½-ton military vehicle similar to the Mighty Mite. This engine is a 4-cylinder, flat opposed job which has 53.5 cu in. displacement, a 6.5:1 compression ratio, and weighs 138 lb.

Sticks with Military — Although the engine is sand cast and has cast iron cylinder liners, Willys says it can be diecast with a little redesigning. The company is also developing a slightly larger engine for a ¾-ton military carryall (a larger version of the Mule). This is a prototype order, and Willys is expected to make delivery in October.

But Can Branch Out—An aluminum engine for the regular military Jeep is still under wraps. It reportedly is a diecast design with six horizontally opposed cylinders and a 100-hp rating. (Compared with the AMC version, it is much closer to the light engine Chevrolet is tooling.)

The engine is just out of the design stage, and Willys management is supposedly debating its development. For military use, it falls into the "disposable" concept: It can be replaced after 100 to 200 hours of operation, or when major maintenance is needed.

It seems unlikely that Willys will make any attempt to bring it out for its commercial vehicles. But there is a possibility it could be produced for military use and for sale to other manufacturers who may want to assemble a small car either here or abroad.

Industry Finance Talk

Three financial maneuvers involving Studebaker-Packard, American Motors, and Chrysler developed last week. Two of the moves may result in more financial stability for the firms.

Studebaker-Packard wants to cancel some of its $55 million, long term debt by recapitalizing, so that the 20 banks and three insurance firms which have loaned it money will receive preferred stock in exchange for cancellations.

Although Harold Churchill, S-P's president, has not officially commented on the report, industry sources believe it's scheduled to go into effect tomorrow (July 1) if details can be arranged. The company has no outstanding preferred stock and needs stockholder approval to make any preferred issues.

Chrysler is arranging a revolving credit of $150 million, says F. W. Misch, financial vice president. The agreement is being made to cover short term credit requirements in the next few years.

About 100 banks have been invited to take part. The agreement will become effective next month and will run until September, 1961. Loans will be on 90-day notes.

Louis E. Wolfson, a major stockholder of American Motors, is disposing of 400,000 shares of AMC stock owned by him and his family. The holdings represent about 7 per cent of the company's common stock.

Mr. Wolfson has indicated he's selling simply because it looks like the stock is about as high as it will get at the present. Estimated earnings for the year are $1.75 a share. The sale discredits earlier talk that the financier had exercised his stock rights to seek operating control of the company.

U. S. Auto Output

Passenger Only	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
5 Mo. Total	1,904,495	2,872,618
June		500,271
July		495,629
August		524,354
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,814
Week Ended	1958	1957
May 24	86,589	127,428
May 31	66,574	82,431
June 7	73,696	129,517
June 14	78,163	125,372
June 21	82,424†	118,805
June 28	77,500*	125,909

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

To Move Operations

Utilization of more modern and efficient equipment is the reason Chrysler gives for plans to transfer stamping operations from two Detroit plants to other Michigan and Ohio facilities.

The move will begin during the model changeover period this summer. Some 2300 workers will be affected. Chrysler has had plenty of trouble with the UAW over transfer rights, and union sources claim the company is taking advantage of the "no contract" period to make the move.

Ford To Use More Glass

Ford Motor Co. is not contemplating a switch from steel to Fiberglas in automobile bodies because of technical problems in manufacturing, says Irving A. Duffy, vice president. But he adds, the company will use more glass in windshields and backlights in the future.

Mr. Duffy says the glass area in the 1959 Ford windshields will be 277.9 sq in. larger than that in current models. The rear glass area in Ford station wagons will be increased 285.8 sq in. Mercury's windshield next year will be 61 per cent larger than it is now.

Ford makes about 60 per cent of the sheet and plate glass it uses. Half is produced at the company's Nashville, Tenn., plant.

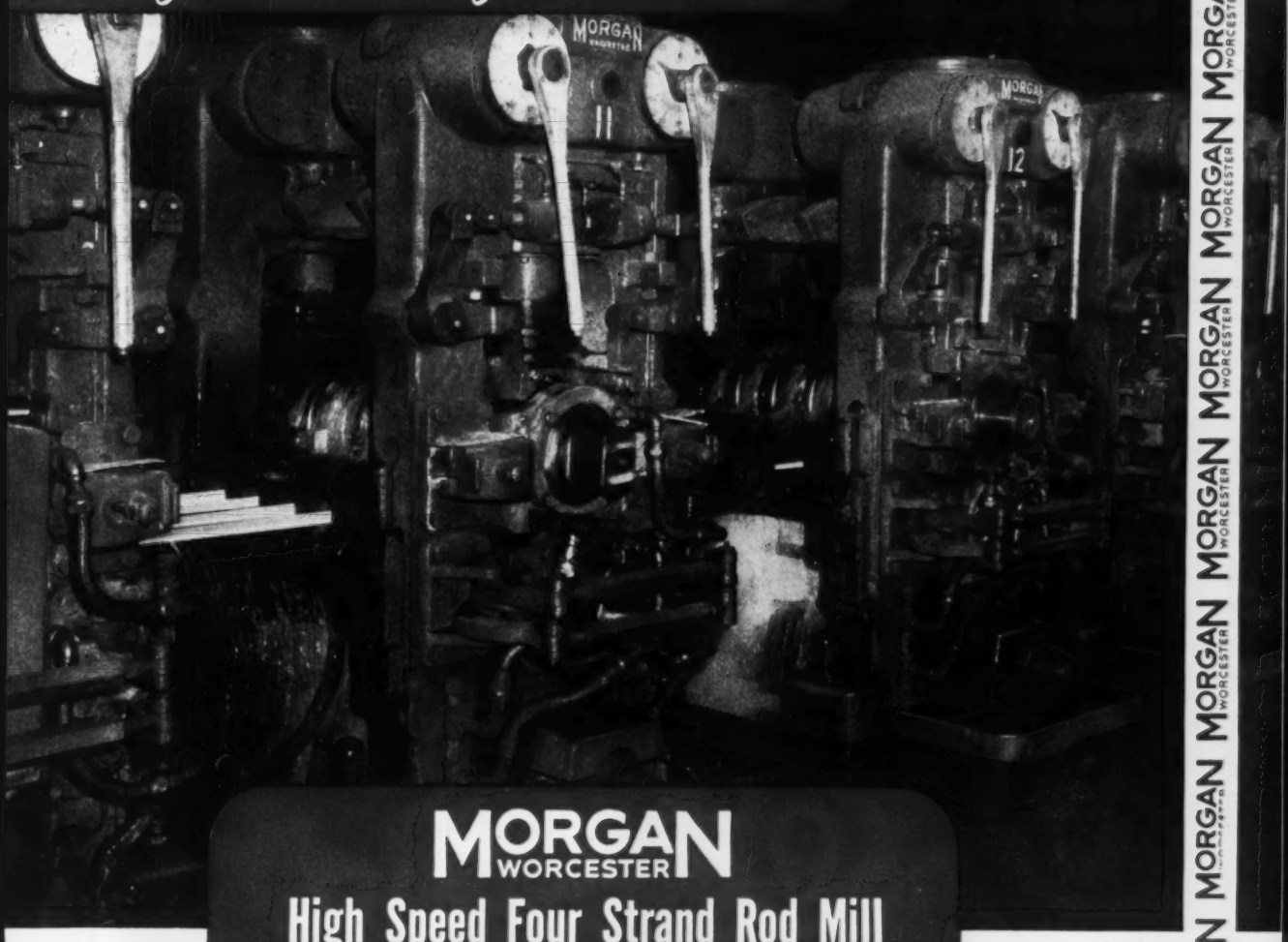
New Battery Shakeproof

A failureproof car battery based on one-piece construction has been introduced by Electric Auto-Lite Co., Toledo, Ohio. It has a 50-month guarantee.

The company says the battery eliminates a major cause of battery failure—plate destroying vibration—by using a special seal that welds the plates and case into a shakeproof unit.

Features include a one-piece cover welded to the case; a permanent seal that prevents acid leaks; a resin that anchors power producing plates so they can't vibrate; and a permanent bond that isolates each cell and maintains higher starting voltage.

Morgan Quality in Action



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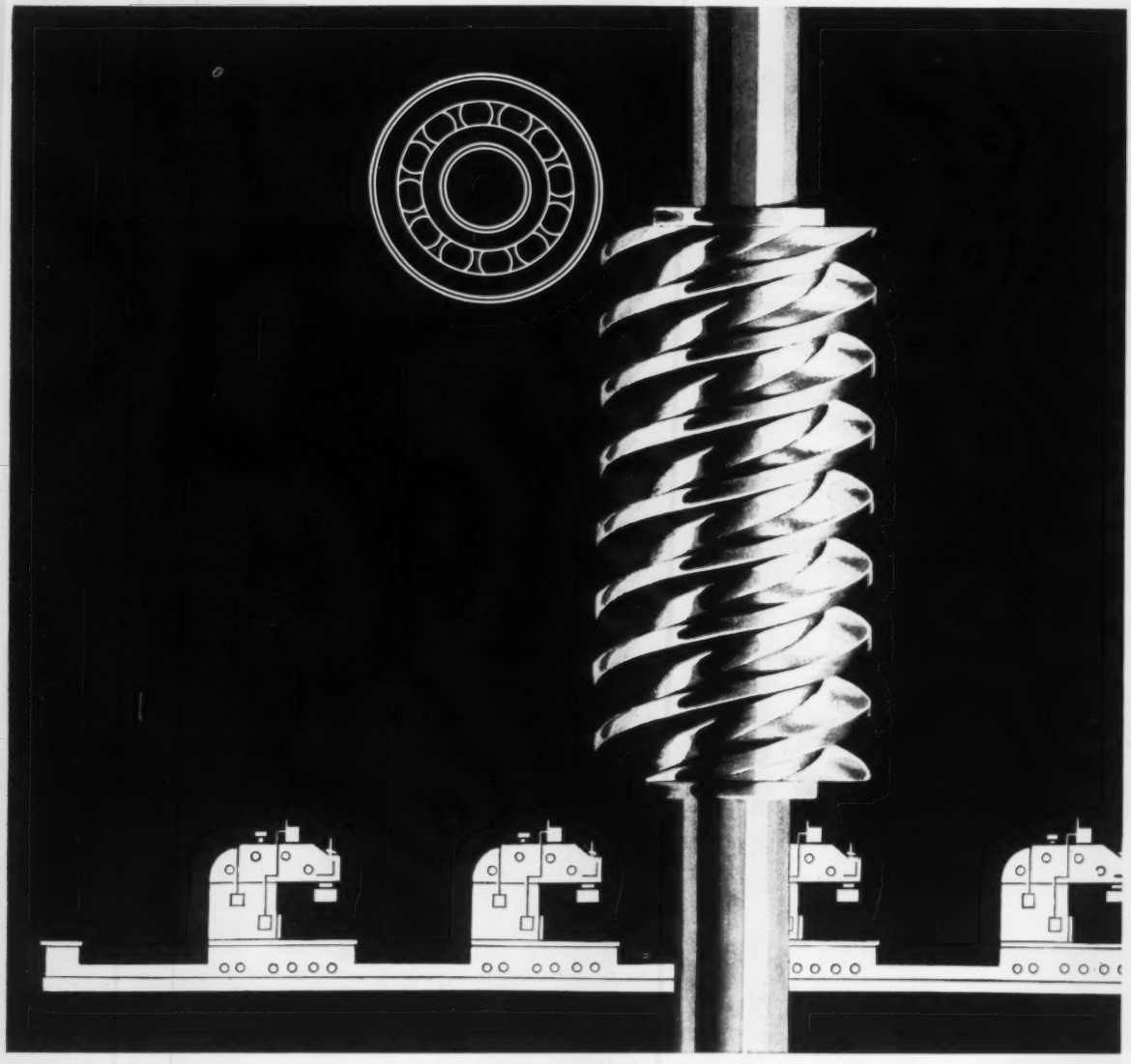

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Esso Pen-O-Led EP lubricants offer an added margin of protection for rugged-duty gears and bearings. Even under the most severe shock and extreme-pressure loads, Pen-O-Led positively prevents the welding of mating gear teeth or bearing surfaces and it checks severe sliding friction of worm gears.

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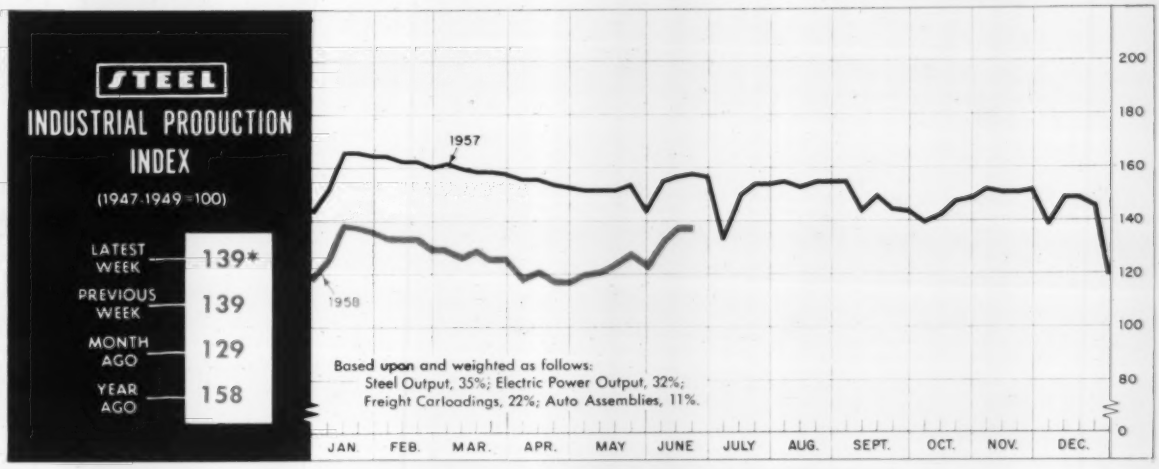

*Week ended June 21.

Production Index Equals 1958 High Point

STEEL's industrial production index has matched the year's highest point for two weeks in succession, but it is doubtful that it will go any higher until after the summer vacation has taken its toll.

Reaching 139 (1947-49 = 100) for the two weeks ended June 21, the index probably will show a preholiday softening during the last full week in June and will be followed by the normally depressed July 4 week. It is unlikely that industry will snap back with anything like the strength that followed the Memorial Day week. (See chart above.)

First Signs—Last week's steel operating rate gives the first clue of things to come industrially. After reaching a 27-week high of 1,751,000 net tons for castings and ingots, the industry began pulling back to about 1,700,000 net tons for the period ended June 29. This is not entirely unexpected, but there is still much guessing as to how far the operating rate will fall in July and August. Not many observers believe that it will drop to the recession low of 46.5 per cent.

The feeling grows stronger each week that steel inventories are so low that mills will be kept fairly active throughout the summer to meet consumption and restocking requirements. Liquidation has been much greater than it was in the 1953-54 slowdown, states the National Industrial Conference Board. During the first quarter, 2.5 million tons of steel were withdrawn from inventory, compared with only 2 million tons during 1954's worst quarter. The trend has continued throughout the second half, leaving fabricators' stocks at approximately the late 1955 level, the Conference Board concludes.

Auto Shutdowns Start—But the steel mills won't get much encouragement from the auto industry. The Fourth of July week probably will see the beginning of a sad summer for carmakers. Indications are that at least four producers will

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,700[1]	1,751	2,150
Electric Power Distributed (million kw-hr)	12,200[1]	12,109	12,337
Bituminous Coal Output (1000 tons)	8,375[1]	7,830	10,120
Crude Oil Production (daily avg—1000 bbl)	6,300[1]	6,335	7,237
Construction Volume (*ENR*—millions)	$429.9	$505.5	$370.8
Auto, Truck Output, U. S., Canada (*Ward's*)	108,584[1]	105,566	151,150
TRADE			
Freight Carloadings (1000 cars)	620[1]	622	747
Business Failures (Dun & Bradstreet)	254	325	265
Currency in Circulation (millions)[3]	$31,070	$31,052	$30,904
Dept. Store Sales (changes from year ago)[3]	−1%	+1%	−2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$28,592	$22,997	$24,253
Federal Gross Debt (billions)	$275.7	$275.9	$274.5
Bond Volume, NYSE (millions)	$26.6	$27.8	$24.1
Stocks Sales, NYSE (thousands of shares)	13,732	13,205	10,903
Loans and Investments (billions)[4]	$93.5	$92.9	$86.8
U. S. Govt. Obligations Held (billions)[4]	$31.2	$31.3	$25.7
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	228.59
STEEL's Nonferrous Metal Price Index[6]	197.6	194.1	218.2
All Commodities[7]	119.0	118.8	117.3
Commodities Other than Farm & Foods[7]	125.2	125.0	125.3

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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The designer need not be restricted to standard fastener sizes when they do not meet the requirements of his application. It is often much less expensive to specify a rivet, nail, screw, pin or stud to meet the task exactly as the application requires, than it is to compromise its function for the sake of "standards." In this regard, we offer the equally important advantages of flexibility according to our customers' design changes and production by high speed, quantity techniques. While there is nothing mysterious about the cold heading process, experience has proved it to be of inestimable value for getting maximum quality and output at a minimum cost. While the really spectacular advantages in cost show up in runs of several thousand pieces, we are also able to take care of your short run requirements. We welcome and expect manufacturers to come to us for advice and assistance concerning their fastener problems.

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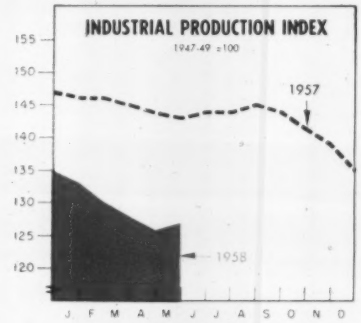
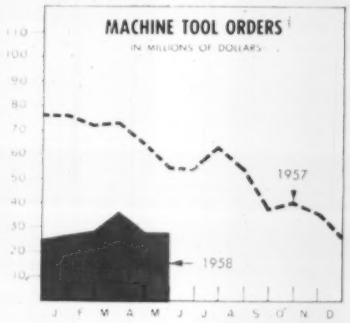




(Seasonally Adjusted)

	Total Production		Primary Metals		Metal Fabricating	
	1958	1957	1958	1957	1958	1957
Jan.	133	146	100	143	159	180
Feb.	130	146	95	143	153	180
Mar.	128	145	91	137	150	179
Apr.	126	144	86	134	146	176
May	127*	143	91*	132	148*	176
June	...	144	...	132	...	177
July	...	144	...	133	...	177
Aug.	...	145	...	136	...	177
Sept.	...	144	...	131	...	174
Oct.	...	141	...	128	...	168
Nov.	...	139	...	121	...	170
Dec.	...	135	...	107	...	163
Avg	...	143	...	132	...	175

Federal Reserve Board. *Preliminary
Charts copyright, 1958, STEEL.

	New Orders		Shipments	
	1958	1957	1958	1957
Jan.	26,850	75,500	57,800	99,900
Feb.	28,300	71,900	48,050	103,350
Mar.	36,150	72,750	54,150	115,600
Apr.	28,300	64,300	50,900	110,650
May	28,050*	53,650	50,350*	104,300
June	...	52,800	...	106,950
July	...	62,650	...	81,450
Aug.	...	52,900	...	78,300
Sept.	...	36,750	...	82,050
Oct.	...	39,700	...	76,050
Nov.	...	35,150	...	59,750
Dec.	...	24,850	...	70,100
Totals	...	642,900	...	1,088,450

Metalcutting and metal forming.
*Preliminary.
National Machine Tool Builders' Assn.

close up for the full week, while others may take extended holiday periods. Buick Div. of General Motors Corp. reportedly phased out its 1958 model output last week. Chrysler Corp. divisions will start the shutdown during the third week of July; GM will complete its shutdowns shortly after that. Ford Motor Co. will be the last to make the model changeover.

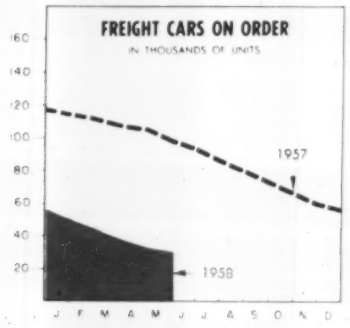
Buick will come back into production first—possibly before Ford phases out—meaning that at no time this summer will the whole industry be idle.

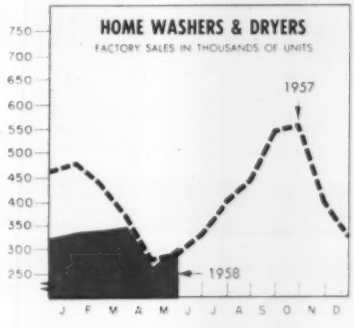
Depends on Weather—Along with steel output, the generation of electric energy has been a chief factor in the rapid rise of the industrial production index during the last four weeks. A glance at the geographic distribution of that output is enough to show that most of the strength is based on weather conditions. In the heavily industrialized areas such as New England and the Midwest, output is still behind the year-ago pace—although not as much as it was in March and April. But in the warmer southern states the increasing use of air conditioners is keeping electric consumption well ahead of last year's.

Freight carloadings continue to show gradual improvement. Most of it is in nonmetalworking classifications. Iron ore loadings have leveled off at well below the year-ago rate. Miscellaneous shipments, which include most metalworking products, are generally lower in June than they are in May. But this is not a clear indication that metalworking production has fallen off the month-ago pace because this category includes too many other products which could influence the figures.

FRB Confirms Upturn

Confirmation of the reversal of the downtrend in over-all production came when the Federal Reserve Board announced a 1 point rise in its index for May (see chart above). The strong showing of STEEL's index this month presages a continued upturn in the FRB indicator of at least 1 and possibly 2 points for the month. Note that even though STEEL's index is equal to the January level, the FRB barometer will fall well below the 133 (1947-49 = 100) established during that month because of seasonal adjustments. Most economists still feel that the low point in this statistical series will occur in July and





	Awards		Backlogs (end of month)	
	1958	1957	1958	1957
Jan.	401	5,328	48,787	114,656
Feb.	294	6,065	43,750	111,965
Mar.	239	5,359	38,027	107,708
Apr.	278	6,429	32,908	105,190
May	1,372	3,423	30,386	97,006
June	....	4,918	.....	91,810
July	....	1,251	.....	85,229
Aug.	....	3,203	.....	79,258
Sept.	....	3,257	.....	71,981
Oct.	....	2,206	.....	65,718
Nov.	....	1,070	.....	59,194
Dec.	....	3,492	.....	55,941
Total	....	42,051		

American Railway Car Institute.

	Washers		Dryers	
	1958	1957	1958	1957
Jan.	238,153	331,314	98,630	144,621
Feb.	263,099	319,580	78,578	114,517
Mar.	278,891	286,205	70,309	83,668
Apr.	224,896	230,675	38,475	42,850
May	262,999	254,195	41,898	31,572
June	.....	282,289	.....	46,783
July	.....	335,139	.....	70,011
Aug.	.....	329,046	.....	116,601
Sept.	.....	384,299	.....	164,468
Oct.	.....	369,487	.....	185,772
Nov.	.....	260,460	.....	141,663
Dec.	.....	206,787	.....	118,116
Totals	.....	3,589,476	.....	1,260,642

American Home Laundry Mfrs. Assn.

August, with gradual recovery in the fall, lifting the level up to 133 or better by December.

Capital Goods Still Off

Producers of capital goods are still looking for signs of an upturn, but they see almost none. About the only joy machine tool builders could find in the May statistics (see chart, Page 68) was that net new orders remain steady. Francis J. Trecker, president of Kearney & Trecker Corp., Milwaukee, says that machine tool companies usually do 60 per cent of their business in the first five months of the year—it would mean shipments this year of $435,417,000, vs. more than $1 billion last year (including both metal cutting and metal forming types).

New orders for industrial furnaces have dropped off just as badly. In May, they set an eight-year low at $953,000, says the Industrial Heating Equipment Association Inc. In the first five months of this year, orders are 55 per cent below the corresponding 1957 figure.

Builders of railroad freight cars fared a little better last month, but they still were well below the year-ago standard. (See chart above.) Shipments totaled 3534 cars, compared with 5163 in April and 8824 in May, 1957.

Failures, Charters Better

May proved to be one of the best months of the year for both business incorporations and failures. Dun & Bradstreet Inc. reports that new businesses numbered 11,943, the second highest monthly total of 1958. It trails the year-ago figure, but the difference is less than it has been any other month this year.

Failures in May totaled 1341, vs. 1458 in April. This is the second consecutive month to show a decline, although 1958 totals have been consistently ahead of the corresponding 1957 levels. June may continue the downtrend. Failures during the week ended June 12 were 254, below both the preceding week and the year-ago week. This is only the second time this year that the current week has dipped below the year-ago period.

Contracts Ahead of 1957's

Heavy construction awards for the week ended June 19 brought the 1958 total to date to $9,145,000,000, exceeding the corresponding 1957 total by 0.3 per cent.

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MATERIALS HANDLING DIVISION
NEW BRIGHTON, PENNSYLVANIA

CHARLES R. TYSON
CF&I executive vice president

ROBERT A. WARFEL
Nelco vice president

LESLIE A. MILLER
senior v. p. at Tennessee

OSCAR L. DUNN
GE motor-generator gen. mgr.

Charles R. Tyson was elected executive vice president, **Colorado Fuel & Iron Corp.**, Denver. He is also executive vice president of John A. Roebling's Sons Corp., subsidiary at Trenton, N. J. He was president of Roebling prior to its acquisition by CF&I in 1952.

Robert A. Warfel was elected vice president and works manager, **Nelco Tool Co. Inc.**, Manchester, Conn., the carbide manufacturing subsidiary of Brown & Sharpe Mfg. Co.'s cutting tool division. Mr. Warfel was superintendent of new product development for Nelco.

Raymond Stymacks was made sales manager, **W. A. Whitney Mfg. Co.**, Rockford, Ill.

Robert A. Niemi was elected executive vice president and general manager, **Allied Products Corp.**, Detroit. He was formerly general manager, Plymouth Div., Burroughs Corp.

Stuart F. Hatch was appointed sales manger, standard pipe products; and **R. W. Mueller Jr.**, district manager, Pittsburgh sales office, for **Spang-Chalfant Div.**, National Supply Co., Pittsburgh. **John C. Madden** was made New York district manager in addition to duties as tubular manager for the export division.

Hugh B. Jackson was appointed general sales manager, **Clemson Bros. Inc.**, Middletown, N. Y., and its affiliate, **Victor Saw Works Inc.** He is replaced as district sales manager in the Kansas City, Mo., area by **Arthur F. Luehrs.**

Leslie A. Miller was elected senior vice president-operations, **Tennessee Products & Chemical Corp.**, Nashville, Tenn., a subsidiary of Merritt-Chapman & Scott Corp. Also advanced to new posts are: **Marcus Evans**, vice president for alloys; **Ralph E. Merryman**, vice president for chemicals and building materials; **Robert W. Romer** as controller; **Howard F. Reeves Jr.** as assistant vice president-research and development.

Walter B. Eklund was promoted from sales manager, industrial division, to operations manager, **Warren Pumps Inc.**, Warren, Mass. He will gradually take on new duties July 1, and will assume complete charge in his new post Jan. 2, 1959, when **W. L. Ripley** retires. **Charles F. Dexter** was made sales manager, industrial division.

Jack D. Tolliver fills the new post of sales manager-eastern region for **Tube Turns**, Louisville, a division of Chemetron Corp. He is succeeded as manager of the sales development department by **Edward F. Harrington.**

L. L. Smith was advanced from vice president to executive vice president, **Kohler Co.**, Kohler, Wis. He succeeds the late **O. A. Kroos. A. G. Kroos**, director of purchasing, and **A. G. Zibell**, manager of plumbing fixture sales, were elected vice presidents.

George M. Bunn was promoted to manager - production control for **Brown-Lipe-Chapin Div.**, Syracuse, N. Y., General Motors Corp.

Oscar L. Dunn was made general manager, motor and generator division, **General Electric Co.**, Schenectady, N. Y. **James M. Crawford**, vice president and general manager of the division, retires July 1. Mr. Dunn was general manager, direct current motor and generator department, Erie, Pa.

H. Stuart Harrison was elected executive vice president, **Cleveland-Cliffs Iron Co.**, Cleveland. He was vice president.

Eugene Ransom was appointed general manager, industrial hose division, **Flexonics Corp.**, Maywood, Ill. He was formerly on special assignment at the Memphis, Tenn., plant.

W. W. Harris was elected vice president-marketing, **Roots-Connersville Blower**, Connersville, Ind., a division of Dresser Industries Inc., effective July 1.

Gene P. Ross was appointed plant manager of the newly established Pacific Coast division of **Titeflex Inc.** He is in Santa Monica, Calif., site of the new Titeflex plant.

O. F. Keeler was appointed manager-product planning analysis at **Dodge Div.**, Chrysler Corp., Detroit. He joined Chrysler in 1955. His most recent assignment was assistant to the executive vice president.

Hanford T. Beatty was made manager, light metals plant, engineering works division, **Dravo Corp.**, Pittsburgh. He was structural shop

F. R. WIDMER WILLIAM P. CARLIN CHARLES B. NELIS

management posts at Republic's commercial research div.

superintendent. **Judson C. Spurgeon Jr.** replaces him.

Fred C. Stockinger, currently west coast district manager for **Bay State Abrasive Products Co.,** transfers to the home office in Westboro, Mass., Sept. 1, as assistant sales manager, a new post. He will be replaced on the West Coast by **Robert F. Kelleher.**

Murray S. Gelber was appointed treasurer, **Hughes Aircraft Co.,** Culver City, Calif. He was vice president-manager of AiResearch Mfg. Co. of Arizona, a division of Garrett Corp., of which Mr. Gelber was secretary.

Malcolm J. Rowe was made manager of marketing, **Airborne Instruments Laboratory,** a division of Cutler-Hammer Inc., Mineola, N. Y. He joined Airborne as assistant to the president in 1957. He previously was executive vice president of Clay Adams Inc.

Robert E. Stanaway was made manager, spectron department, transducer division, **Consolidated Electrodynamics Corp.,** Monrovia, Calif.

Philco Corp. named **Dr. Saul Rosen** to the new post of manager, programming research and development, for its Transac computers. He has headquarters in Philadelphia.

R. E. Fitzpatrick was appointed Cleveland district sales manager, **Fulton Sylphon Div.,** Robertshaw-Fulton Controls Co.

George V. Clark was appointed western district manager, **Baker Industrial Trucks Div.,** Otis Elevator Co. He is in Los Angeles.

F. R. Widmer, former assistant manager, was made manager of the commercial research division of **Republic Steel Corp.,** Cleveland. He succeeds **Philip J. Sandmaier,** retired. **William P. Carlin** and **Charles B. Nelis** were made assistant managers of the division.

Copeland Refrigeration Corp., Sidney, Ohio, named **Edward J. Czarnecki** production control manager; **J. Bernard Goodwin** to serve on the production staff, special assignments.

C. E. Cromwell was appointed manager of commercial sales, **De Laval Steam Turbine Co.,** Trenton, N. J., in addition to his duties as field sales manager. **A. L. Foltz Jr.** was made manager, Chicago district office. He is replaced as manager of the Detroit district office by **J. F. Donovan.**

John A. Dersch was appointed director of engineering, **Read Standard Div.,** Capitol Products Corp., York, Pa. He was assistant chief engineer.

Reliance Electric & Engineering Co., Cleveland, named **E. L. Bronold** sales manager of apparatus sales; **C. Porter Packard,** sales policy manager-marketing services. **Edwin R. Campbell** was made branch manager in the sales office at Tampa, Fla.

Fred T. Miller was made regional sales manager, **Weston Hydraulics Ltd.,** North Hollywood, Calif., subsidiary of Borg-Warner Corp.

Lawrence P. O'Brien was promoted to the new post of field service coordinator for **Maytag Co.'s** Cincinnati, Chicago, and Indianapolis branches.

Allen E. Reed fills the new post of vice president-finance, **Raytheon Mfg. Co.,** Waltham, Mass. He continues as treasurer.

H. J. Smith was appointed special services consultant of **Barry Steel Corp.,** Kenilworth, N. J., a newly created post.

Pittsburgh Coke & Chemical Co., Pittsburgh, named **W. H. Thomas** general superintendent, coke and iron division; **John S. Dods,** assistant general superintendent, coke and iron division; **Robert W. Hanlon,** superintendent, coke and by-products department.

William A. McGregor was assigned new duties as general manager of **Brown & Sharpe Ltd.,** Plymouth, England. He was manufacturing manager, industrial products division, Brown & Sharpe Mfg. Co., at Providence, R. I.

Vernon D. Hauck succeeds **LeRoy D. Kiley,** retired, as general manager, **Friez Instrument Div.,** Bendix Aviation Corp., in Baltimore. Mr. Hauck was assistant general manager.

Roger R. Giler was made product planning specialist, welding division, **Westinghouse Electric Corp.,** Pittsburgh.

P. E. Fedeles was appointed sales engineer for the metalworking industry in western Michigan by **Latrobe Steel Co.** His office will be in Grand Rapids.

Edward G. Howard was made Washington representative for **Pesco Products Div.,** Borg-Warner Corp.

Marquardt Aircraft Co., Ogden, Utah, division, announces association of **Frank E. Wartgow** as technical liaison representative on castings and forgings for its manufacturing engineering department. He was formerly with Ford Motor Co., aircraft engine division, Chicago..

Charles B. Tillson Jr., former general superintendent of **Crucible Steel Co. of America** mines, was named assistant manager of the company's fuel division. He is at Pittsburgh.

Dr. Phillip W. Lett was named chief engineer; **Walter C. Beyer,** assistant chief engineer of defense

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Tube Turns mgr.-nuclear, power

MAJ. GEN. C. C. JEROME
joining Budd Co.

W. KENT KISE JR.
Carpenter Steel metallurgist

ALBERT A. HALLY
Campbell Chain v. p.-marketing

ROBERT E DESHON
Western Nipple gen. mgr.

FRED J. WATT
new post at Patterson-Kelley

engineering at **Chrysler Corp.**, Detroit.

Albert A. Hally was elected vice president - marketing, **Campbell Chain Co.**, York, Pa. He joined the company in 1954 as sales manager.

Robert E. Deshon was appointed general manager, **Western Nipple Mfg. Co.**, Los Angeles, subsidiary of Republic Supply Co. of California.

Anthony J. Szynkiewicz was appointed plant manager at **Orr & Sembower Inc.**, Reading, Pa.

Alfred M. Goodman was made chief inspector, **Acme Steel Co.**, Chicago. He was supervisor of quality control.

United States Rubber Co. appointed **Walter D. Baldwin** vice president in charge of a newly formed automotive sales department at Detroit.

George L. Scripps was named manager of **Caterpillar Tractor Co.'s** Milwaukee plant to succeed **Walter H. Stiemke**, retired.

Fred J. Watt was made assistant to the president, **Patterson-Kelley Co. Inc.**, East Stroudsburg, Pa.

S. Manuel Pearl was appointed sales manager, **Circle Wire & Cable Corp.**, Maspeth, N. Y., subsidiary of Cerro de Pasco Corp.

Howard Taussig was made sales manager, **Green Steel Co.**, Dayton, Ohio.

Clark - Cutler - McDermott Co., Franklin, Mass., elected **F. Roland McDermott** president; **Henry J. Aimone**, vice president, **Leo G. McWilliams**, treasurer.

L. E. Rasmussen, formerly plant manager, fills the new post of general manager, Cincinnati division, **Bendix Aviation Corp.**

William L. Forgie, vice president, **Universal - Cyclops Steel Corp.**, Bridgeville, Pa., assumes additional duties of treasurer. He replaces **S. J. Hug**, who, for reasons of health, retires July 1. **John V. Faulkner**, assistant secretary, was also made assistant treasurer.

Frank S. Briggs was made manager of a newly established nuclear energy and powerplant section, sales development department, **Tube Turns Inc.**, Louisville, a division of Chemetron Corp.

Maj. Gen. Clayton C. Jerome, USMC, who retires shortly as commanding general, aircraft, Fleet Marine Force, Pacific, is joining **Budd Co.**, Philadelphia, as director of industry development. He will have headquarters in the newly opened west coast office in Los Angeles, where he will direct sales for the defense and nuclear systems divisions, as well as two subsidiaries: Tatnall Measuring Systems Co., and Continental-Diamond Fibre Corp.

Carpenter Steel Co., Reading, Pa., appointed **W. Kent Kise Jr.** as metallurgist in the special alloys development group. He was formerly chief engineer, Electro-Plastic Corp., Ft. Lauderdale, Fla., in charge of research and development of high permeability, magnetic material components.

Charles A. Fox was appointed Pittsburgh district sales manager, **Vulcan-Kidd Steel Div.**, H. K. Porter Company Inc. He has headquarters at the home office at Aliquippa, Pa.

John Ellis was named sales manager for **Southern Pipe & Casing Co.**, Azusa, Calif.

OBITUARIES...

David E. Cohn, vice president and treasurer, **Chicago Gear Mfg. Co.**, Chicago, died June 13.

Wolf P. Cohen, 76, president and chairman, **Elesco Smelting Corp.**, Chicago, died June 10.

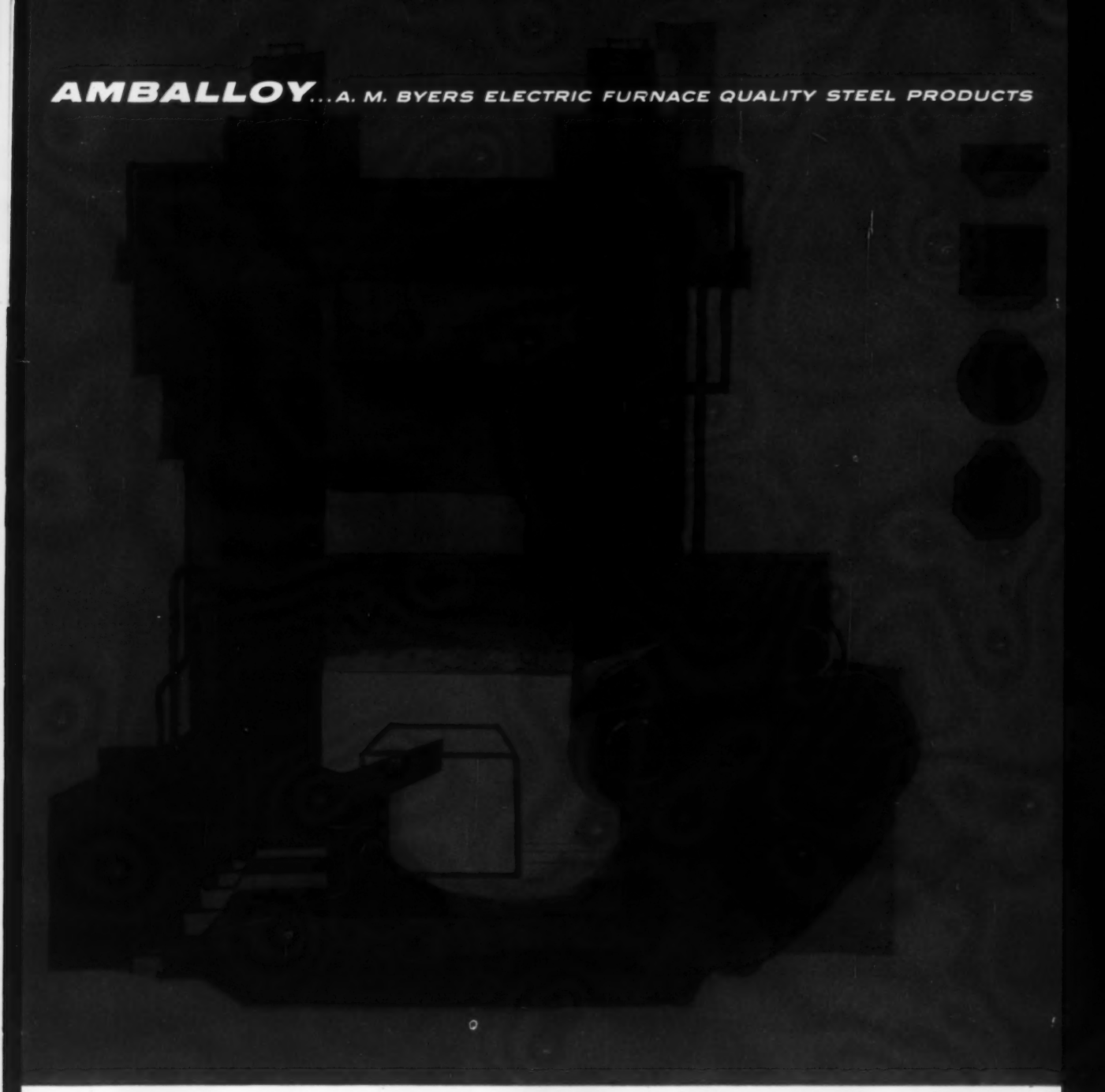
Helmer V. Kruse, 69, consultant and former chief engineer, **Phelps Dodge Corp.**, Douglas, Ariz., died June 9.

Howard A. Kenworthy, 73, consultant and former sales engineer, **Tube Reducing Corp.**, Wellington, N. J., died June 9.

Philip N. Engel, chairman, **Infilco Inc.**, Tucson, Ariz., died May 26.

William T. White, 59, assistant purchasing agent, **U. S. Pipe & Foundry Co.**, at Birmingham, died recently.

AMBALLOY... A. M. BYERS ELECTRIC FURNACE QUALITY STEEL PRODUCTS



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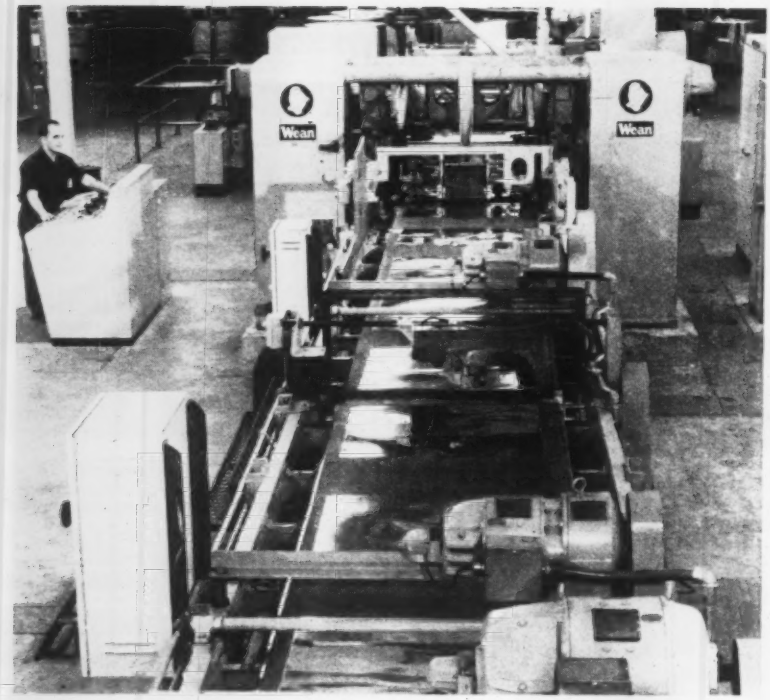


American Can Co.'s shearing line at Hammond, Ind. . . .

Cuts Raw Material Costs

THE FIFTH FACILITY in American Can Co.'s $31-million coil processing program is operating at Hammond, Ind. In one year, it can process 600,000 tons of sheared plate.

The facility includes eight Wean shearing lines (one of which is shown above); a chemical treating line for black plate; and a Littell processing line for shearing black plate and smaller tin plate coils into sheets for shipment to canmaking plants.

Program Revolutionary — Until less than a year ago, all canmakers received tin plate in rectangular sheets which were inspected, sheared, and bundled at the steel mills. Searching for new economies, Canco announced about a year ago a program to establish coil processing centers to cut material costs.

The shearing equipment can handle coils weighing up to 17,500 lb. Coils in inventory are unwrapped and moved by lift truck to a roller conveyor which takes them to an upender. It places them on a carriage which hydraulically lifts and moves them into position on an uncoiling mandrel for feeding into the shear line.

Special tracking devices keep the strip in a straight line, rollers remove curvature, and an electronically maintained loop prevents drag as the strip enters the shear.

Automation Is Goal—Electronic gages measure plate thickness. Visual inspection for surface appearance and electronic pinhole inspection follow. Substandard sheets are rejected automatically.

William C. Stolk, Canco's president, terms the facility a stepping stone toward complete automation. Ultimate goal is to feed tin plate or steel plate coils through continuous enameling or lithographing lines directly into canmaking equipment.

Canco has coil centers operating at five points: Hammond, Tampa, Fla.; St. Louis, Milwaukee, and Oakland, Calif. Within a year, centers will be operating at Houston, Los Angeles, and Hillside N. J.

Latrobe Builds Warehouse

Latrobe Steel Co., Latrobe, Pa., is building a warehouse and office at 2919 Tanager Ave., Los Angeles, Calif. The $250,000 facility will handle high-speed steels, tool and die steels, stainless and specialty steels for the manufacture of aircraft components and missiles. Philip E. Gordon is the Pacific Coost district manager.

Tubemaker Builds Plant

Victor Metal Containers Ltd., subsidiary of Victor Metal Products Corp., Newport, Ark., is installing production machinery in its plant at 30 Bermondsey Rd., East York Township, Ont. Initially, the plant will produce collapsible tubes of tin, lead, and aluminum. Other metal products will be added as the market develops.

Boosts Testing Program

Eastern Gas & Fuel Associates, Boston, is constructing an addition to its research laboratory in Everett, Mass., to substantially increase its rate of testing in coal and coke research. John Mitchell is research director.

Heli-Coil Corp. Expands

Heli-Coil Corp., Danbury, Conn., has launched a $75,000 program for the renovation of administrative, research, and engineering offices in its building. The new area will occupy more than 10,000 sq ft.

Closes Fabricating Plant

Consolidated Western Steel Div., U. S. Steel Corp., will close its plant at Taft, Calif., where it fabricates bolted and welded tanks, cotton gins, and other products from plate and structural steel. Warehouse facilities for storage of bolted tanks and field erection activities for steel plate products will be moved to Bakersfield, Calif.; all other equipment will be consolidated with the division's operations at Fresno, Calif.

Closes Foundry July 11

National Malleable & Steel Castings Co., Cleveland, will shut down its Indianapolis plant July 11 for at least a year. Reopening of the plant, part of its Industrial Div., will depend on business conditions and the company's production requirements.

Havir Broadens Press Line

Havir Mfg. Co., St. Paul, acquired the line of Diebel automatic presses from the Di Machine Corp., Chicago. The manufacture of Diebel metal stamping presses will be shifted to St. Paul under the direction of J. A. Munkholm, executive vice president; L. F. Strain, vice president; and Irene A. Gustafson, secretary-treasurer. All castings will be made at the company's foundry in St. Paul under the direction of Art Bunes, vice president. A. H. Havir is president of the firm.

Plans Offshore Plant

Freeport Sulphur Co., New York, is erecting a sulfur mining plant in the Gulf of Mexico, seven miles off the coast of Louisiana. The Y-shaped structure, nearly a mile long and rising 55 ft above the water, is the principal part of a $30 million project to develop a major new sulfur deposit known as Grand Isle. When completed in 1960, it will be one of the largest sulfur mining operations in the world.

Forms Plate Products Unit

Fitzgibbons Boiler Co. Inc., New York, established a Fabricated Plate Products Div. at Oswego, N. Y. The division will produce pressure vessels, condensers, heat exchangers, large pipe, cylindrical piles, vulcanizers, barges, and similar special products.

Kaiser Relocates Facilities

Kaiser Steel Corp. is relocating its facilities at its Fontana, Calif., plant as part of a $214-million expansion program. The move will take six weeks. About 800 construction workers will be employed three shifts daily.

The project entails moving six rolling stands (each weighing more than 250 tons) and related equipment to the new hot-strip mill building more than ¼ mile away. Also to be moved are six finishing mill stands, crop shears, scale breakers, a flying shear, a hot-run table, two downcoilers, two chain conveyors, and electrical components.

Equipment is transported on railroad cars and low boy trucks.

NEW PLANTS

Air Reduction Sales Co., a division of Air Reduction Co. Inc., New York, dedicated its $9-million facility for the production of liquid oxygen, nitrogen, and argon at South Acton, Mass. Capacity: 75 tons of liquefied gases a day.

International Nickel Co., New York, will build a pilot plant costing about $215,000 near its present facilities at Port Colborne, Ont., to carry out experiments in nickel refining. Construction is not expected to start until next year. R. C. McQuire is refinery manager.

National Tank & Boiler Co., St. Louis, is operating a new $500,000, 30,000 sq ft plant in Hazelwood-Berkeley, Mo. An adjoining 4000 sq ft office houses engineering, service, and executive personnel.

Molded Fiber Glass Body Co., Ashtabula, Ohio, purchased a 60,900 sq ft plant at 3714 Ann Ave., that city. It houses assembly operations, a model and tool shop, and sales and engineering departments.

NEW ADDRESSES

Mannesmann-Meer Inc. (formerly Mannesmann-Meer Engineering & Construction Co. Inc.), Easton, Pa., moved its operating quarters to 755 Wick Ave., Youngstown, Ohio. The president's office was moved to 680 Fifth Ave., New York 19, N. Y.

United States Trademark Association moved its headquarters to 6 E. 45th St., New York 17, N. Y.

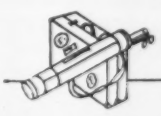
Marchant Calculators Inc. moved its administrative department to 6701 San Pablo Ave., Oakland, Calif.

Allied Research Products Inc., Baltimore, moved its central district offices to 400 Midland Ave., Detroit, Mich. L. J. Camill is district sales manager.

Crown Rheostat & Supply Co. moved its plant to 1965 Pratt Blvd., Elk Grove Village, Ill. Capacity has been expanded 60 per cent.

Whitman & Barnes, manufacturer of drills, reamers, and carbide tools, Plymouth, Mich., moved its Los Angeles branch to 5226 E. Washington Blvd., that city. R. J. Conroy is the west coast district manager.

Spectrochemical Laboratories Inc. moved its operations to 8350 Frankstown Ave., Pittsburgh 21, Pa. This marks completion of a $300,000 expansion program.



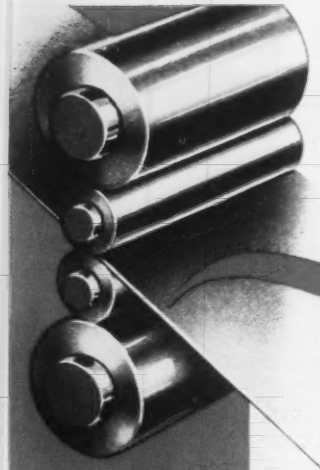
VACATIONS

Hamilton Standard Div., United Aircraft Corp., Windsor Locks, Conn., is closing from July 27 through Aug. 10. Shipments will be accepted during the vacation period only if they indicate delivery to Departments 14 and 15 in Building No. 1; 214 and 215 in Building No. 2; and 66 and 357 in Building No. 3.

Louis Allis Co., Milwaukee, will close its plant July 28 through Aug. 4. Only stock motors and emergency repair parts will be shipped during that period. District offices will remain open and a skeleton crew will be maintained at the factory.

Offices and plants of **Orenda Engines Ltd.** at Malton, Ont., and Nobel, Ont., will be closed Aug. 2 through Aug. 18. Shipments will be received at the Malton plants during the period.

Sikorsky Aircraft, a division of United Aircraft Corp., Stratford and Bridgeport, Conn., will close its offices and factories from July 26 to Aug. 10, inclusive. No shipments will be accepted during the vacation period.



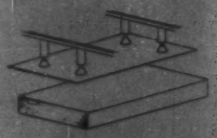
Here's where

P/M PRODUCTIONEERING*

UPS sheet & strip quality, squeezes costs, to offer a more satisfactory product

P/M
PROCESSING EQUIPMENT INCLUDES:

CONTINUOUS PICKLING



VACUUM HANDLING

SLITTING

GRINDING & SCOURING

Also:

- Slit Coil Banding Equipment
- Shearing & Cut-to-Length Lines
- Coil Build-up and Inspection Lines
- Levelling & Uncoiling — Recoiling
- Continuous Lines for Annealing, Coating, Grit Blast Cleaning, & Miscellaneous Sheet & Strip Processing

*PRODUCTIONEERING is the P/M way of working so engineers who supervise equipment designing have first-hand knowledge of problems encountered by sheet and strip processing line users. In working with P/M you work with responsible engineers who apply their skill to solve your problems.

Mills using *PM Productioneered** lines are processing sheet and strip so it satisfies their customers better. In many cases this is done with simplified processing, and with actual cost saving.

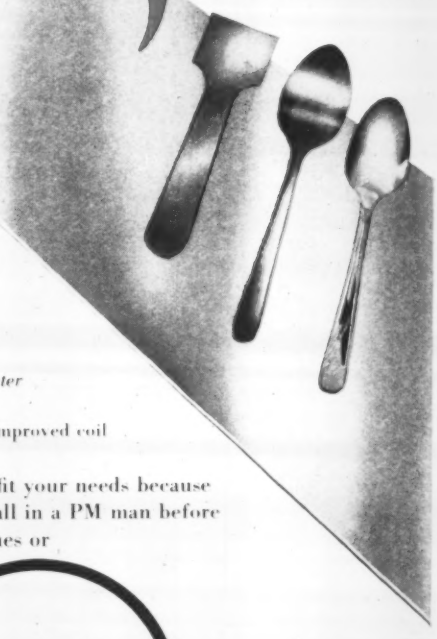
There's no magic in this improvement. Good engineering geared exactly to the needs of the mill is the heart of *PM Productioneering*.

Example: PM engineers suggested *minor modifications* in a line being planned, with the result that it was capable of handling a *much greater* variety of products;

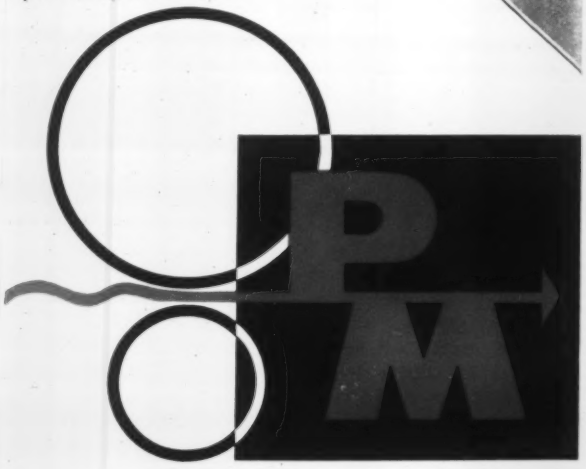
Example: output of a slitting line was doubled by improved coil handling and automatic handling . . . etc., etc.

PM Productioneering tailors processing lines to fit your needs because PM people study and understand your needs. Call in a PM man before you plan installation of any of the processing lines or equipment listed at left.

PM processing produces more satisfactory strip for this end product



Production Machinery Corporation
Maple St. at Nickel Plate RR
(P.O. Box 104) Mentor, Ohio



STEEL

June 30, 1958

Technical Outlook

AIR BEARINGS— High pressure air injected around a bearing may be the answer for high temperature, radioactive devices that can't use normal lubricants, Manfred Wilman, Autonetics Div., North American Aviation Inc., Downeyville, Calif., told a Detroit meeting of the ASME. Called air bearings, such devices are also used in digital computers and high precision gyroscopes.

ELECTRODE WEAR SLOWED—A British Iron & Steel Research Association project indicates that graphite electrodes coated with silicon carbide wear much slower than uncoated electrodes in the arc furnace atmosphere. The developer of the coating method is trying to find a cheaper way to apply it.

BETTER FUEL— Crushed coal is a better fuel when it's irradiated with gamma rays and dispersed in fuel oil, some railroad experts say. The process cuts particle size. One railroad believes it could save $400,000 a year by adopting it as locomotive fuel.

HELP FOR RHODIUM PLATERS— Anodes made of platinum-clad tantalum cost 90 per cent less than solid platinum types, says Metals & Controls Corp., Attleboro, Mass. The clad metal is expanded into a mesh to give greater anode distribution and more uniform plating. Principal users are rhodium platers.

RECLAIMED BEARINGS—Eastman Kodak, Rochester, N. Y., says you can restore up to 62 per cent of used antifriction bearings with this method: Clean in solvent; remove dirt with ultrasonic vapor degreaser; check physicals like radial clearance, bore, outside diameter; mount on a spindle and turn under a load; use a vibration meter or accelerometer to determine numerical value of bearing quality.

SPACE AGE PRODUCTION TEAM— Wind tunnel models are made by Convair in 10 per cent of the time required for hand methods. The reason: A team composed of a digital computer, numerical control director, and Giddings & Lewis profiler. It's one of the first examples of a completed part made entirely from an engineers' sketch. People at the San Diego plant point out that they process ten changes in missile or airplane design in the time it used to take for one.

CERAMIC COATED WIRE—To meet the demand for electrical equipment that will stand high heat, engineers at General Electric and scientists at Battelle Memorial Institute, Columbus, Ohio, pooled their efforts to develop a copper wire coated with porcelain enamel. The product is flexible, and its electrical characteristics are said to be comparable with those of its organic coated counterpart. GE is ironing out bugs in a pilot plant.

RUBBER BEATS HEAT— Du Pont's new Viton, a synthetic, can take 550° F for 8 minutes without losing its physical properties, recent tests show. The material is primarily for hot aircraft and missiles. (Rubber tires on supersonic planes must stand 600° F at Mach 3.) The formula is also said to have superior resistance to superpremium fuels, hydraulic fluids, and most chemicals that deteriorate standard rubbers.

AUTOMATED FORGINGS —Forgings are being made with the stock handled entirely by an automatic manipulator, the British Iron & Steel Association reports. The manipulator is ready for production jobs. All forging steps can be preselected, or they can be remotely controlled one at a time.

STUDIES PLATING PROBLEM— An Air Force sponsored project at Stanford Research Institute, Menlo Park, Calif., is aimed at finding better ways to plate high strength steels and avoid hydrogen embrittlement. Tests show that sulfamate and perchlorate baths and a cadmium-tin alloy have great promise. Certain additives like butynediol cut the embrittling tendencies of acid baths. Next problem: Economy.

Metalworking Outlook—Page 43 Market Outlook—Page 119

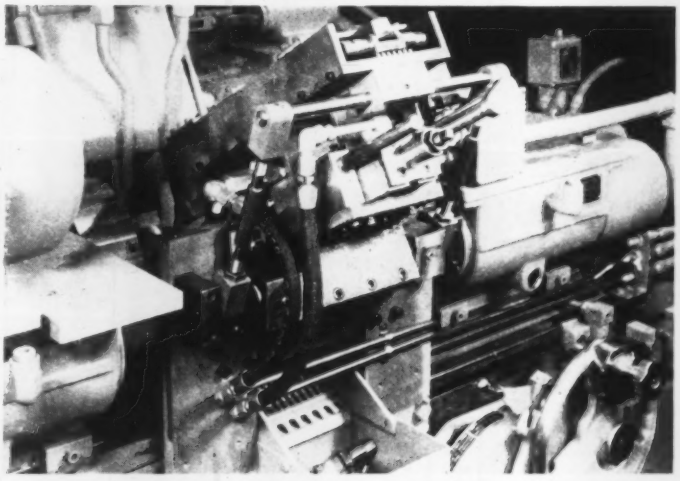
THE JOB:

Grind two diameters on differential shafts

OLD METHOD

1. Locate from V-surface and center drill
2. Load into grinder and grind first diameter
3. Unload
4. Load into grinder and grind second diameter
5. Unload

NEW METHOD **1.** Load into hopper.



Guard has been removed to show how parts ride down the chute (at top) into the loading position. Finished pieces lie in the bin below

COST CRISIS . . . How to Beat It

Machine Doubles Up on Grinding

Close watch on production costs pays off as a grinding job is made more efficient. Savings help the company soften the impact of unavoidable cost boosts elsewhere

ONE of the simplest ways around a production stalemate when you've already pushed your equipment to capacity is to combine machining operations.

That's the opinion of production men at Dana Corp.'s Ft. Wayne, Ind., plant. They are grinding two diameters of a clutch type differential shaft at the same time.

Old Method—The part has an irregular diameter on each end—two flat surfaces machined on the diameters to form V-shaped locating surfaces. The concentricity tolerances between the locating surfaces and the ground diameters are critical.

Dana production men used to position the parts carefully, locating on the Vs, and center drill each end. Then the parts were taken to the cylindrical grinder, loaded on centers, and the first surface was ground.

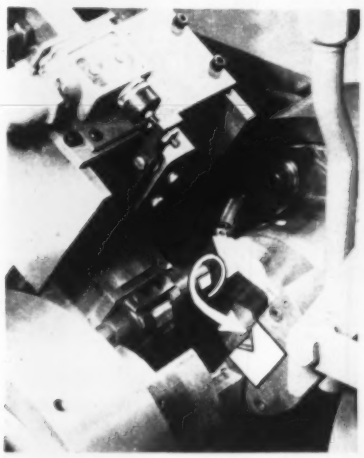
The parts were unloaded, turned around, and reloaded for grinding the second diameter.

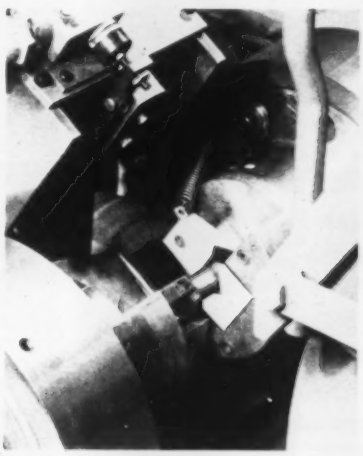
New Method—Studying the machining process, production men came up with the idea of using a grinder with two grinding wheels mounted on the same spindle. The technique cuts grinding time in half, doing both diameters in the same machine cycle.

N. W. Kimmel, plant manager, cites another benefit. When his people talked to the machine tool builder, Norton Co., Worcester, Mass., they decided to use an automatic feeding system that puts the shafts in fixtures (rather than between centers) and locates them from the V-surfaces. It eliminated the need for centering the parts and prevents the accumulation of tolerances from the V to the center holes to the ground diameter.

The cycle is automatic—parts are fed from a hopper, and the machine

2. Locate from V surface in grinder and grind both diameters.





Sequence photos show part in position for loading into the oriented fixture so V-surface is properly oriented. View at right show loading and clamping completed

SAVED

50 per cent of the direct labor charge

automatically ejects finished parts into a chute.

In addition to the automatic cycle, the machine is equipped with automatic endwise locators, automatic wheel wear compensation, constant peripheral wheel speed, and controlled truing.

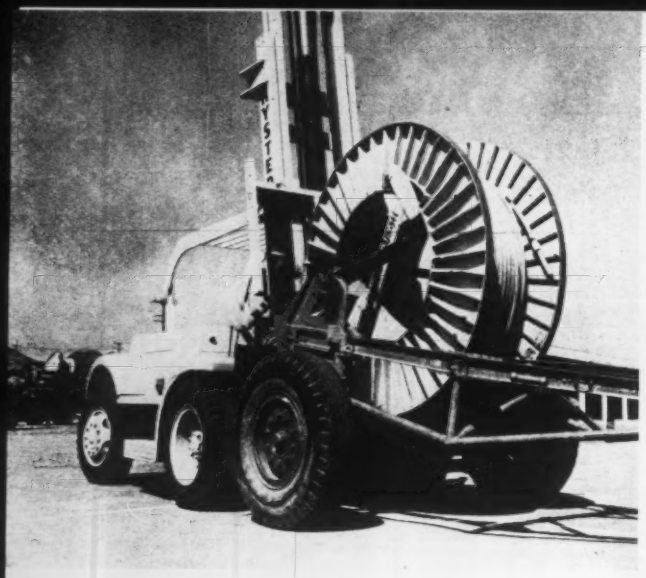
When the two wheels plunge grind, they take about 0.010 in. of stock off each surface.

Results — Management's original estimates of savings have held true. With sufficient demand for parts to justify two of the machines, production men say they have reduced the direct labor portion of unit costs at least 50 per cent. The reduction is paying off by helping to counteract unavoidable cost increases in other areas.

COST CRISIS COMPETITION

This article is part of a campaign to help industry achieve lower unit production costs. The accompanying article and others preceding it, are examples of what the editors of STEEL have received from industry as entries in the Cost Crisis Competition.

Watch for selected entries to be published in STEEL, beginning next week.



Solutions to Special Handling Problems

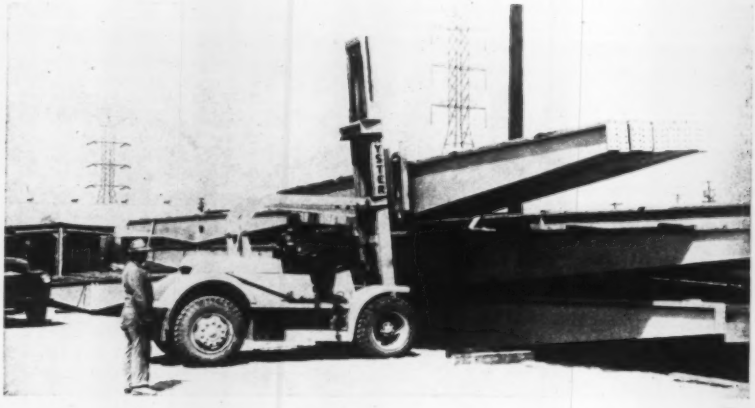
Some loads defy standard methods. Pipe, cable, steel beams, and bar stock are examples. Here are seven headaches that were cured by imaginative engineering

Reels Always Ready for Reloading

A 15,000-lb capacity lift truck is used to unload reels of cable from trucks, move them about the yard, and reload them for shipment to district yards. The cable dolly is loaded by a lift truck which holds the reel by a bar inserted through the hub. The dolly is towed by a pickup truck for line stringing

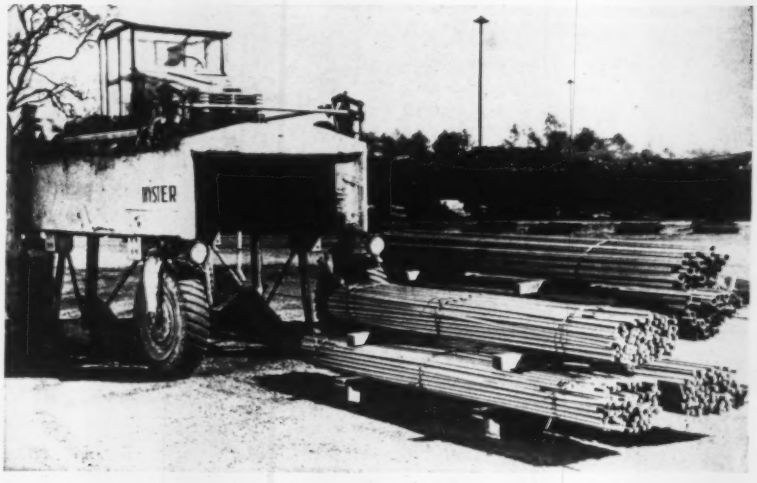
Carries Nine 50-ft Beams . . .

By nesting these 50-ft steel beams, nine units can be handled at one time. The beams are being taken from yard storage for truck loading. To handle such large loads, a lift truck must have stability, maneuverability, and controlled movement



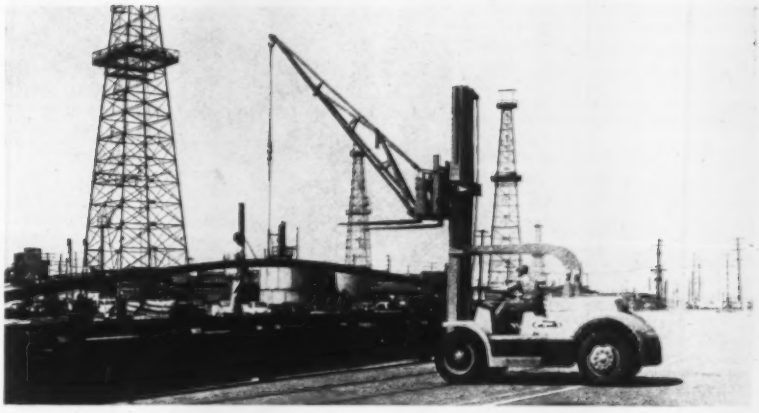
Awkward Loads Are Bundled . . .

Double handling economy is illustrated. Steel pipe and bar stock —two items that normally are difficult to handle—have been bundled and bound to make a tight, compact load for straddle carrier handling. In addition to permitting a greater number of units to be handled at one time, load damage through spillage is greatly reduced



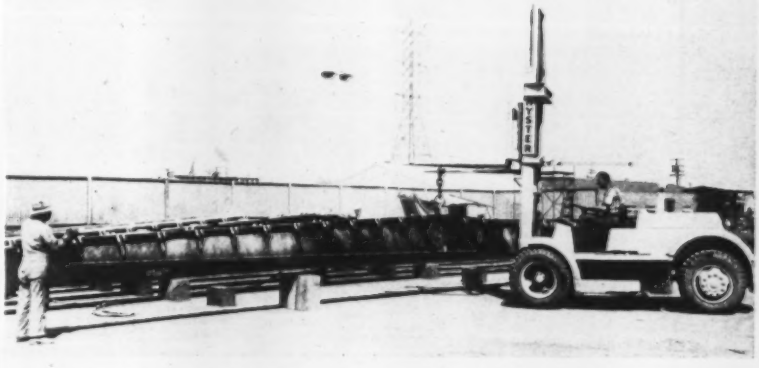
Truck Doubles for Crane . . .

A large fork truck (15,000-lb capacity) equipped with a boom takes the place of a yard crane in handling 80-ft I-beam sections. The boom-equipped truck also can be used for handling large, bulky loads which would be difficult to lift with forks. With this Hyster attachment, the forks are still available for standard load handling



Handles Beams 120 ft Long . . .

Suspending this 68-ft beam from a clamp anchored to the fork of a lift truck allows it to swing nearly parallel to the truck and makes it possible to carry it through the yard storage area. Beams as long as 120 ft are handled by this method at a California steel fabricating plant

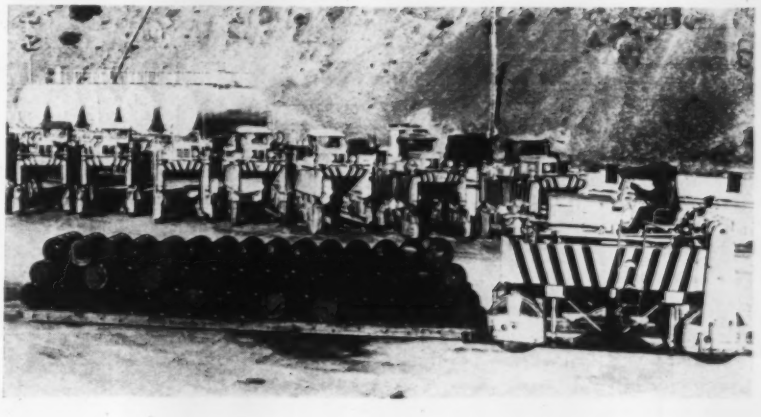


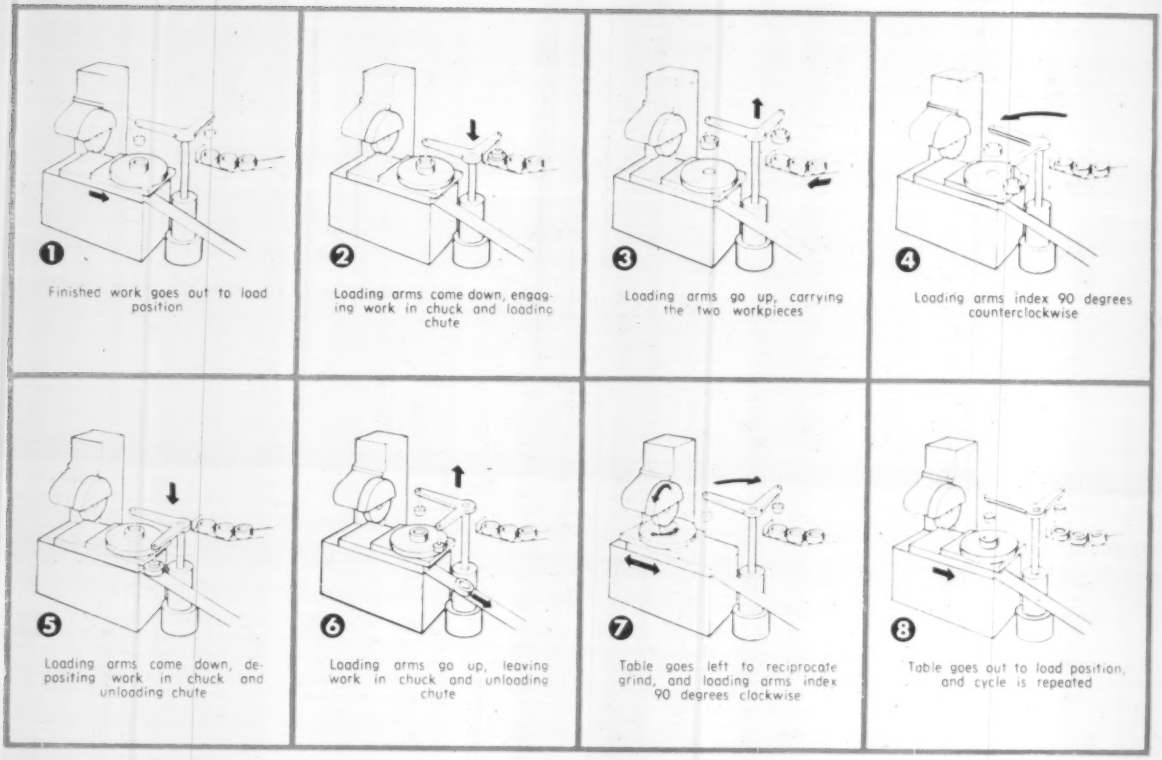
Unloads Car in 2 Hours . . .

By bundling steel pipe into units of 100, a large southern California oil company is able to unload a gondola car in less than 2 hours. The job formerly required two days. The bundled pipe is lifted out of the gondola by a crane, stacked on a flatbed trailer for delivery to the company's storage yard where it is unloaded by a lift truck equipped with a spreader bar attachment

Moves 48 Drums at a Time . . .

Transporting petroleum products in the military services is a major handling challenge. Here's an effective solution worked out by the U. S. Navy at Pt. Molage Naval Fuel Annex, Richmond, Calif., for transporting 48 drums at one time. The Hyster straddle carrier is equipped with special extension shoes which bolt to the truck's regular load shoes




1
Finished work goes out to load position
2
Loading arms come down, engaging work in chuck and loading chute
3
Loading arms go up, carrying the two workpieces
4
Loading arms index 90 degrees counterclockwise
5
Loading arms come down, depositing work in chuck and unloading chute
6
Loading arms go up, leaving work in chuck and unloading chute
7
Table goes left to reciprocate grind, and loading arms index 90 degrees clockwise
8
Table goes out to load position, and cycle is repeated

Rotary Surface Grinding Goes Automatic

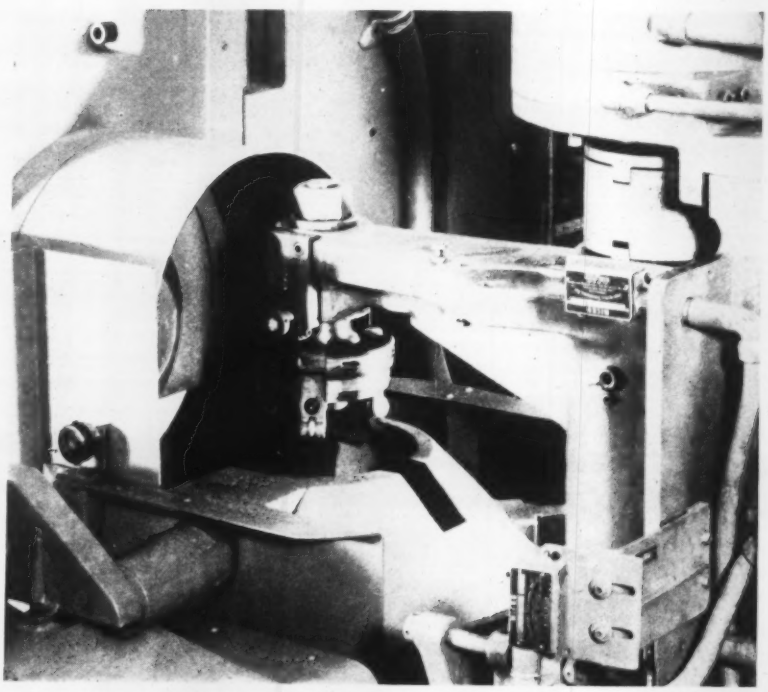
AUTOMATION has brought increased production and a substantial reduction in part costs to rotary surface grinding, says Clifford G. Menard, chief grinding engineer, Heald Machine Co., Worcester, Mass.

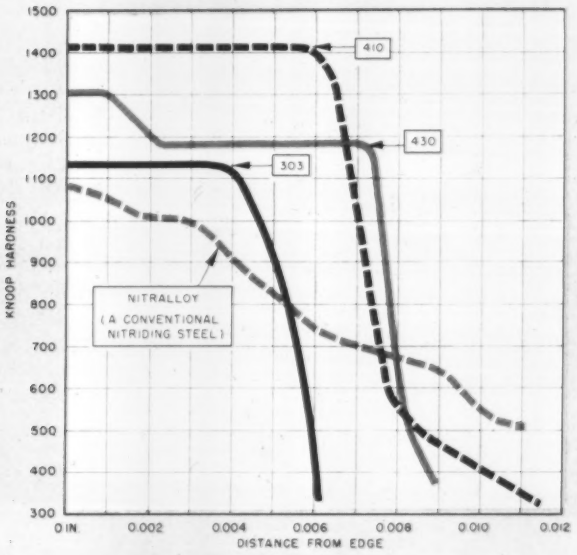
The new approach provides fully automatic operation with conveyorized loading and unloading and mechanical feeding of parts to the machine.

An after-gaging station on each unloading chute checks finish size automatically, actuating signal lights which indicate over or undersize parts. The gage signal is fed back to the diamond dressing unit to correct any tendency to drift out of size.

The company says its system can be applied to all models of standard Heald machines.

The key is a hydraulic mechanism that loads and unloads the grinder automatically.





Hardness levels of stainless steels produced by nitriding with the American Bosch Arma Corp. method. All samples were treated for 15 minutes in liquid salt and subsequently gas nitrided for 48 hours

Harder Stainless Practical

Method of nitriding which uses both a salt bath and gas treatment can be applied to all types of stainless steel. It's simple, fast, and economical

By ROBERT N. LIBSCH
Chief Metallurgist
American Bosch Div.
American Bosch Arma Corp.
Springfield, Mass.

HIGH HARDNESS plus excellent corrosion resistance is a combination not easily come by in steel. One way to achieve it is by nitriding austenitic stainless. Another is by heat treating high carbon stainless.

Some of the high carbon varieties can be treated to hardness levels of around Rc 60, but this may not be hard enough. Steels of this class (440C for example) are deep hardening, so the entire section becomes hard and brittle, and their corrosion resistance is relatively low.

Surface Makes Problems — The high chromium content of stainless steels, which gives them their corrosion resistance, acts against any surface treatment. It forms a transparent chromium oxide surface which is passive and resists the entrance of gases such as nitrogen.

A number of methods for activating this surface so that it will absorb nascent nitrogen have been tried. They involve high initial nitriding temperatures, vapor blasting, pickling, and multiple gas treatments—all are high cost procedures of doubtful efficiency.

The 18-8 and similar Group III steels, because of their high nickel and high chromium contents, are among the most corrosion resistant, and at the same time the most passive and difficult to nitride economically. One commercial method for nitriding them employs a liquid salt bath, but it is slow and the nitride case it makes is shallow.

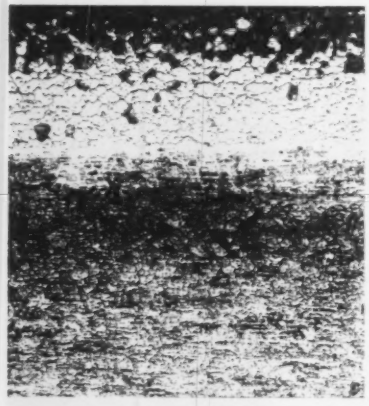
Another Way Found—American Bosch Arma Corp. has a newer method which starts with a salt bath, using it only enough to activate the stainless surface, after which normal gas nitriding produces a hard case to the desired depth. The process can be adapted to selective nitriding, so that one section of a piece may have typical untreated stainless properties and another section high hardness and increased wear resistance.

The company is using the combined liquid and gas method to do a selective nitriding job on levers which have been investment cast from 321 stainless.

Activation Is Fast—Experiments at American Bosch have shown that only 15 minutes in the salt bath will completely destroy the oxide layer on Type 303 stainless, thus activating the surface. Stainless steels of other groups react in similar fashion.

The fused salt bath is composed of about 60 per cent sodium cyanide and about 40 per cent potassium cyanide. After the salt treatment, the parts are rinsed in water be-

Nitrided Group I (410) chromium martensitic stainless, austenitized at 1850° F and tempered at 1100° F. The nitrogen has diffused inward with no marked line of demarcation



Nitrided Group II (430) chromium ferritic stainless steel. The case depth and hardness come to a rather abrupt halt, with the outer (black) portion having a greater hardness than the inner (white) case

Nitrided Group III (303) chromium-nickel austenitic stainless steel. The outer case is deep, with a fine crystalline structure, and shows a sharp transition zone

fore they are placed in the nitrogen environment.

With any type stainless treated in this manner, normal gas nitriding will produce a case that varies in depth with treatment time. The cycle is comparable to that used for regular nitriding steels. Elapsed time between the salt bath and gas treatment is not critical.

Answering the Critics—A big argument against nitriding has been that it destroys the surface layer of chromium oxide which gives stainless its fine corrosion resistance. This has been demonstrated with salt spray tests.

It is true that most nitrided stainless does not withstand the salt spray test to the same degree that the alloy did prior to nitriding. It is also true that salt plays no part in many environments in which nitrided stainless would be used. For example, nitrided surfaces are extremely resistant to many compounds encountered in the petroleum industry.

Nitrided cases of 18-8 and similar stainless types maintain their hardness and oxidation resistance to 1000° F, sometimes higher. Fatigue properties are enhanced due to the compressive surface stresses. This may be an advantage when space requirements do not allow components to have dimensions large enough to give them a sufficient factor of safety.

For All Stainless — Martensitic, ferritic, and austenitic stainless steels can be nitrided. The photomicrographs and the graph show differences in structure and hardness which result.

They reveal that it is possible by nitriding to further increase the hardness of quenched and tempered martensitic (Group I) and ferritic (Group II) stainless steels. The hardness values obtained are considerably higher than those obtained with conventional nitriding steel.

One of the most interesting applications of nitrided 18-8 and similar types stems from the fact that they are austenitic. When magnetic characteristics of a device such as servocontrol valves are critical, nitriding these steels may be a perfect solution. Then, too, certain areas of a part such as a turbine blade, may be nitrided to enhance abrasion resistance without appreciable loss of oxidation resistance.

Chem-Milling Safer

The process is being used to machine magnesium-thorium alloys for aircraft and missile parts

CHEMICAL milling is reducing tool costs, eliminating health hazards, and simplifying machining processes in the fabrication of aircraft and missile parts from magnesium-thorium alloys.

Health hazards created by the mildly radioactive thorium elements in the alloys are limited mainly to the inhalation of dusts (produced during grinding operations) and fumes (generated during welding and pickling).

No Dust Created—In chemical milling, no dusts are produced and fuming is negligible. Wastes accumulated during the process generally can be disposed of by standard methods used to handle chemical solutions. Chemical milling also eliminates the combustion hazards that complicate physical machining and welding of magnesium-base materials.

United States Chemical Milling Corp., Manhattan Beach, Calif., has established methods which are being used in production runs of magnesium-thorium alloys. Examples:

1. A structural support for the exterior surface of a control element. In service, the support, a magnesium-thorium casting, is subject to heat generated by air friction and to radiated heat from the tail pipe of the power unit.

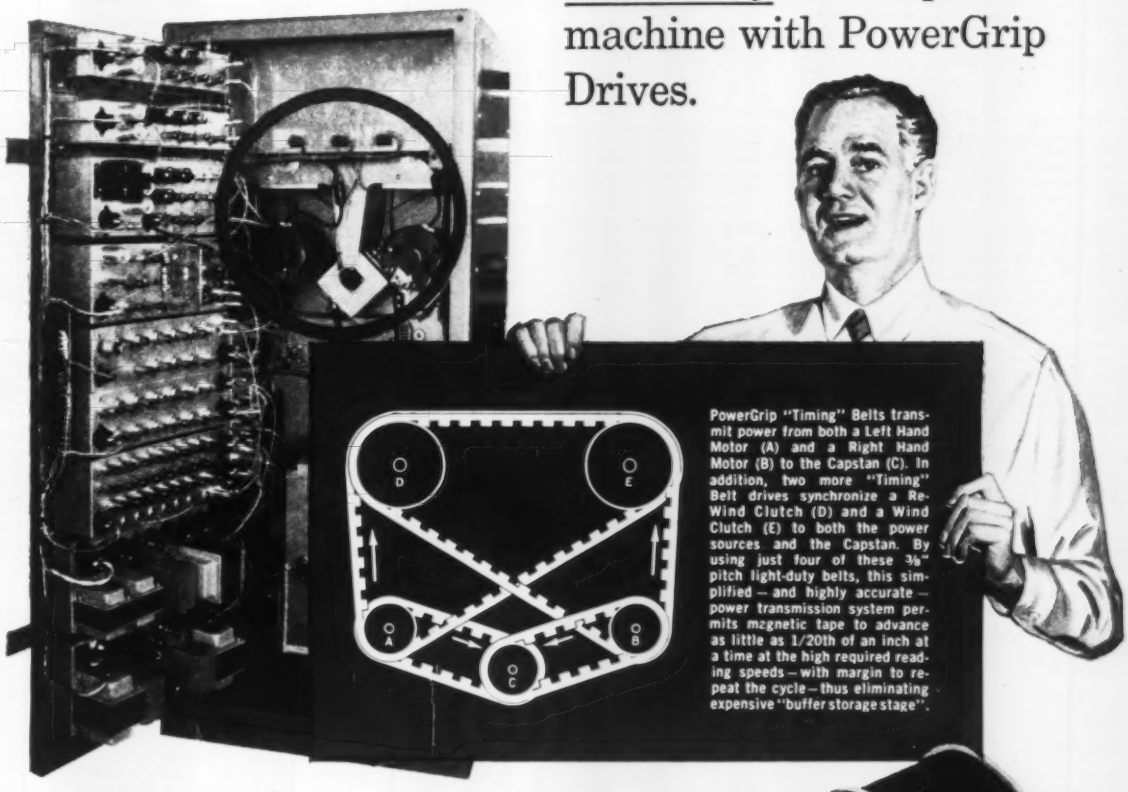
2. A contoured and tapered structural member of a wing tip element. It is subject to heat generated by air friction and to vibrational forces of aerodynamic origin.

Alloys Resist Heat — Critical strength temperatures of the magnesium-thorium alloys are in the 350 to 500° F range. They span the gap in the strength-temperature range between conventional aluminum and magnesium and the steel and titanium alloys.

Integrally reinforced skins and structural members, straight or tapered, are chemically machined without essentially increasing the complexity of the basic tooling. The method gives the design engineer latitude in capitalizing on the properties of the magnesium-thorium alloys in aircraft and missile uses.

US RUBBER ***PowerGrip*** "TIMING" BELTS

"GRIP" POWERS tells how they improved the sale-ability of this precision machine with PowerGrip Drives.



PowerGrip "Timing" Belts transmit power from both a Left Hand Motor (A) and a Right Hand Motor (B) to the Capstan (C). In addition, two more "Timing" Belt drives synchronize a Re-Wind Clutch (D) and a Wind Clutch (E) to both the power sources and the Capstan. By using just four of these 3/8" pitch light-duty belts, this simplified – and highly accurate – power transmission system permits magnetic tape to advance as little as 1/20th of an inch at a time at the high required reading speeds – with margin to repeat the cycle – thus eliminating expensive "buffer storage stage".

The Shepard Servo Transport Digital Tape Reader, shown here, is used to match the speed of electronic information being fed from high-speed data processing machines to the speed of the apparatus which transcribes the electrical impulses into readable typewritten copy.

By incorporating PowerGrip "Timing"® Belt drives into this system, the following sales advantages were gained:

- *no maintenance problems*... no lubrication, no take up or other special alignment required; drives will last for the life of the machine.
- *vibration-free transmission*... belts run smoothly and quietly with constant angular velocity.
- *handles high shock loads*... slippage and belt friction eliminated; steel cables imbedded in the belt provide high tensile strength.
- *lower cost*... PowerGrip costs ½ as much as previous drive; saving is passed to the customer.

Says E.J. Quinby, Product Manager: "We use these belts because exhaustive research by us has proven them superior in speed–accuracy–reliability – durability – silence – freedom from periodic adjustment."

Check the *sales advantages* PowerGrip "Timing" Belts can add to your designs.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER **Mechanical Goods Division**

United States Rubber

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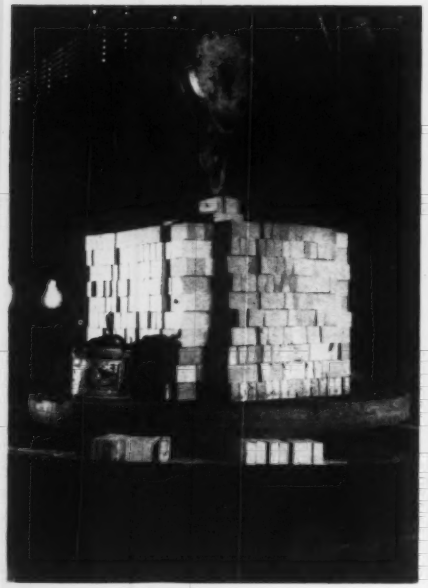


Crane lowers platform into the ladle while helpers go to work loading the next platform. Bricks are arranged in order of use

Inside the ladle, the masons work at comfortable height, standing on a sturdy platform. No helpers are needed to hand them supplies, and the ladle edge is clear of bricks which might fall in

Platform Cuts Ladle Relining Costs

It makes more efficient use of manpower and creates safer working conditions. Method has proved itself during several years of use at Timken Roller Bearing Co.

EVER CONSIDER that there must be a better way to reline a ladle? Someone at Timken Roller Bearing Co., Canton, Ohio, did, and the result is a model of efficiency.

A sturdy working platform, lowered into the ladle by crane, has done away with all scaffold building and the danger of bricks tumbling in from the ladle lip. Helpers aren't even required at the ladle while masons are laying bricks.

The platform is a circular steel grid which will fit into the ladle bottom with a few inches to spare. It provides plenty of room to store bricks, as well as a place for the masons to stand. From its center rises an H-beam stem, topped by a lifting eye.

From Bottom Up — When old bricks have been cleaned out, an overhead crane lowers a pallet of firebricks. Time is saved by purchasing the pallets preloaded with five sizes of bricks, enough for the bottom and three courses up the side.

Meanwhile, the helpers are loading the platform with bricks in reverse order, so that those needed first are on top of the stack. A crane picks up the loaded platform by the lifting eye, and lowers it into the ladle bottom. The load is sufficient to let the masons complete the lining halfway up the 12-ft ladle.

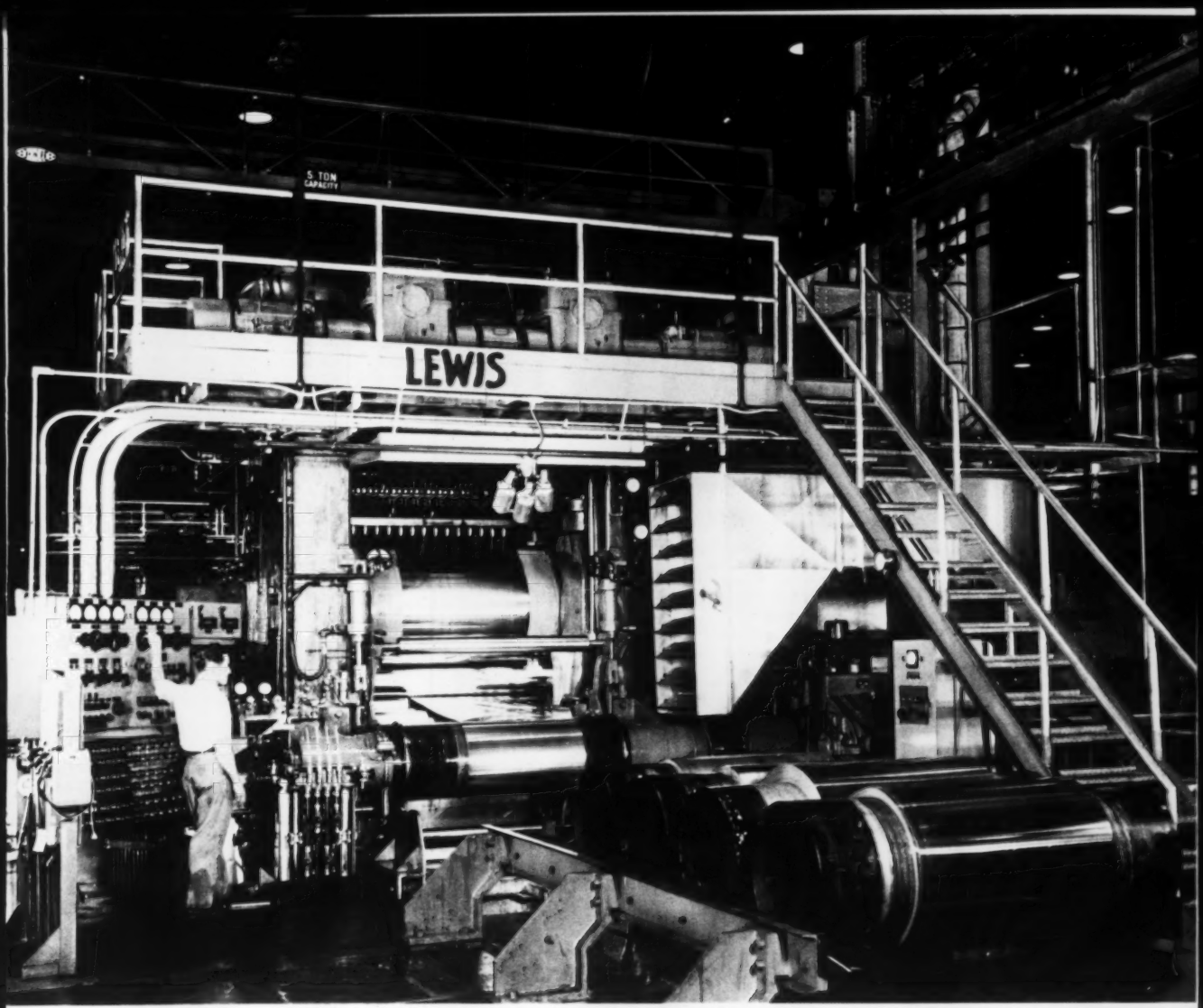
Finishing the Ladle—Then the crane removes the empty platform and substitutes a table about 6 ft high. On top of this goes another circular platform, preloaded with bricks for finishing the ladle.

Two helpers and three masons can lay about 6500 bricks a day, enough to line three hot metal ladles. Even the mixing of mortar has been done away with by buying it prepared in 200 and 500 lb drums.

Oxygen through Backwall

Oxygen lances, inserted through the backwall, are being used for decarburization in the 100-ton basic open hearth furnaces at the Margram melting shop of the Steel Co. of Wales Ltd. The oxygen "gun" enters through a hole that does not destroy the stability of the backwall refractories. Heat protection is provided by a water-cooled coil lining the hole.

The oxygen jet gives a rotary motion to the bath which constantly exposes fresh metal. It has resulted in substantial reduction in refining time, has reduced fuel consumption, and helps to achieve the desired high tapping temperature.



9½ and 34-inch by 60-inch Foil Mill at Kaiser Aluminum and Chemical Corporation, Ravenswood, W.Va.

BLAW-KNOX
ALUMINUM FOIL MILLS

Blaw-Knox designs and builds a full range of Aluminum foil mills complete with auxiliary equipment to meet individual requirements. Other Blaw-Knox equipment for metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron and steel rolls, Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

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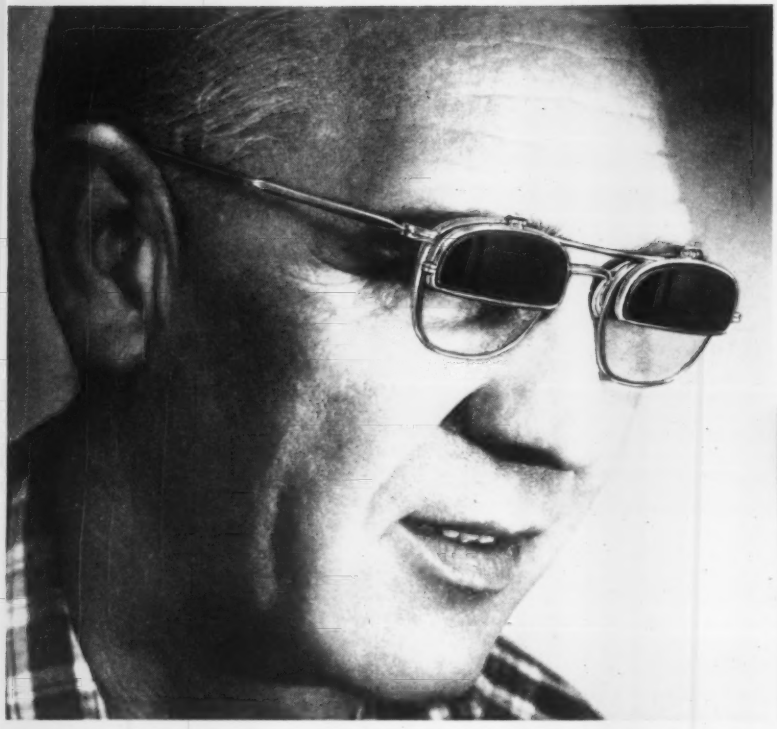


Eye Protection

SCS202
Lift-Front Goggles

Gives Vision "a Lift" on open Hearth Furnace Work and Welding Operations!

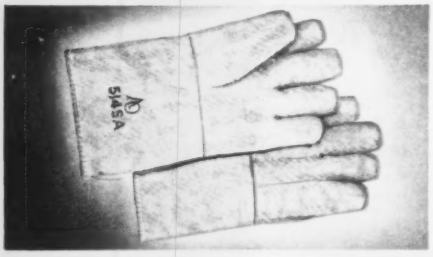
AO's NEW LIFT-FRONT ULTRASCOPIC SAFETY SPECTACLES

Here's a new AO-engineered spectacle-type safety goggle (SCS202) featuring a half-eye metal lift-front segment . . . in the popular new ultrascopic shape* . . . and hinged to the top of our F5100 frame. A specially developed friction joint permits the lift section to be raised and lowered repeatedly without loosening. The lift-front can be set in any position and will hold even after constant use.

The SCS202 is regularly fitted with clear, plano Super Armorplate lenses or with prescription lenses when needed.

The lift-front section is available with cobalt blue or Calobar lenses AND CAN UTILIZE A NEAR POINT SEGMENT FOR WELDERS WHO NEED CORRECTED VISION FOR OVERHEAD OR SHOULDER-HIGH WORK. This feature is especially practical for under-helmet protection — eliminates the need for spherical power plates which have to be changed manually when a change in vision range is needed. Your nearest AO Safety Products Representative can supply you.

*The AO F5100 Series features wider field of vision . . . double braced bridge and many advancements.



Also New! AO Silvabestos† Gloves

Abrasion tests show increased wear resistance up to 168 per cent over conventional asbestos gloves. Recommended for open hearth operations, heat treating, handling hot parts, etc.

NOTE: AO Sweatbands keep workers cool and comfortable . . . increase efficiency . . . prevent accidents due to blurred vision. Keep a supply of sweatbands on hand.

†Registered by Raybestos-Manhattan, Inc.

Always insist on AO Trademarked Safety Products

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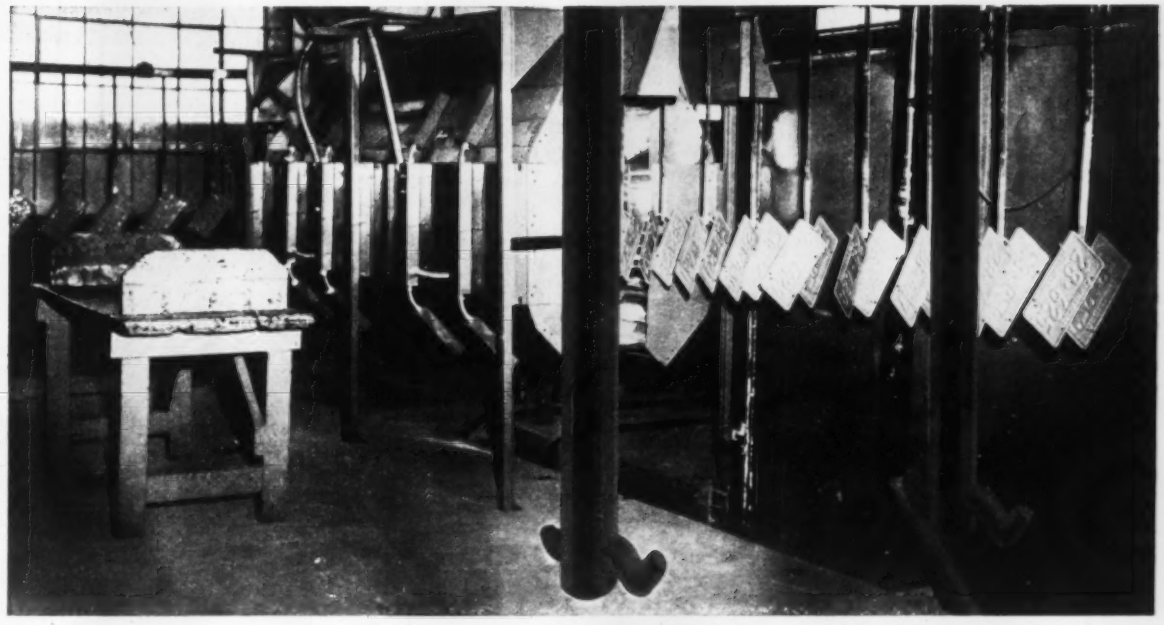


Combination radiant oven has three temperature ranges. License plates and highway signs are shown emerging after drying. Control panel can be operated remotely to insure safety

Infrared Degreases License Plates

Novel oven uses quartz lamps to vaporize oil, leaving clean surface for prime coat. Device doubles as a dryer. Firm says it gets cheaper operation, more production

OFFICIALS at State Reformatory, Cheshire, Conn., say degreasing license plates with infrared heat lamps cut their costs 85 per cent.

Other advantages cited include a 400 per cent increase in production, improved housekeeping, and safer operation. The oven also doubles as a paint dryer. Production: 335 prime coated plates an hour.

How It's Made — The radiant oven installation has an overhead conveyor which moves the plates through opposed banks of quartz lamps. The oven has built-in ventilation.

The panel board which controls the oven can be disconnected by remote control. It contains all electrical instruments including conveyor and blower interlock controls, heat rheostats for two-level operation, and disconnect switches. No preheat or cooling period is necessary.

Easy To Change—Automatic controls permit quick cycle changes in oven operation. Degreasing is done at 700° F for 2 minutes. Top coats are baked at 300° F for 2 minutes. Parts can be heated at 250° F for up to 8 minutes.

The previous system was manual. Materials cost $100 a week. Output was just under 300 plates an hour.

The infrared oven processes about 1200 plates an hour. When the oven is used for degreasing, electricity costs $62 a week; for paint drying, that cost drops to about $20.

Lamps Are Improved—The infrared quartz lamps are an improvement on the better-known reflector type. They produce temperatures up to 1500° F quickly. The maximum of the reflector type is about 600° F. The tubes withstand 1700° F without softening.

One of the construction problems has been reflector metals. Blowers are normally used to cool them.

A 500-watt tube costs $7, 3800-watt $24.50. Normal life is around 5000 hours. All tubes are $\frac{3}{8}$ in. by 1 in. for each 100 watts of lighted length (plus 2 in. for base at each end). Quartz lamps resist a tremendous amount of thermal shock.

Safety Features—The infrared operation is clean which simplifies housekeeping.

Penal institutions need extra safeguards for equipment, say reformatory officials. The layout, engineered by Fostoria Pressed Steel Corp., Fostoria, Ohio, prevents deliberate harm to the equipment. It is fenced except at loading and unloading points.

No one can touch the oven. The control panel is locked and it can be shut down from many other points in the office.

Coated Abrasives Advance

Industry's machine show proves the grinding and finishing process can handle a variety of man-sized production jobs. Newest development exhibited: Longitudinal tube finishing

INDUSTRIAL COATED abrasives have come a long way from their sandpaper origin. To establish coated abrasives as hard working metalworking tools, Behr-Manning Co., Troy, N. Y., recently held its third Coated Abrasive Machine Show.

More than 2000 customers and potential customers toured the exhibit area in Behr-Manning's new product engineering building. They saw 138 coated abrasive machines and a host of small power hand tools.

Conversation Pieces—Three manufacturers introduced techniques for longitudinal finishing of tubes, wire, extrusions, and strip stock. The most radical, shown by Kearsarge Engineering Corp., New London, N. H., uses a reciprocating action to continuously finish strip, rounds, or shapes.

The strip passes between four pairs of reciprocating fixtures at rates up to 80 fpm. Each fixture is faced with a section of abrasive belt. At regular intervals, the belt is indexed so a new abrasive surface is brought to bear on the work. The job is done by the reciprocating action, rather than with a speeding belt. The technique can also be used on cut lengths or odd shapes like gun barrels, golf club shafts, and airfoil sections.

A second approach to longitudinal finishing uses opposed, coated-abrasive flap wheels. Designed and built by Murray-Way Corp., Birmingham, Mich., the machine can process simple shapes or complex extrusions at rates up to 20 fpm. It can also be adapted to use buffs, setup wheels, or abrasive belts, with a variety of combinations to give almost any surface finish.

The third approach to the same problem: A relatively simple machine that positions a spindle head (turning a flap wheel) over the long workpiece. As the workpiece passes under the wheel on rolls, it rotates slowly, presenting all sides to the wheel periphery. Unlike conventional grinding, this process lines the wheel up parallel (instead of at right angles) to the workpiece, giving it the longitudinal finish lines. It's built by Hammond Machinery Builders Inc., Kalamazoo, Mich.

Why? — Coated abrasive experts are excited about their ability to finish parts longitudinally for at least two reasons. They point out: If you want to redraw or rework the part, the longitudinal lines are musts to prevent working finish marks into the part. Also, for fatigue parts like springs it's a distinct advantage to have the finish lines in the direction of the strip, rather than across it.

Descaling Progress

Showgoers also asked about descaling of steel sheets, particularly those from automotive companies that are working on bumper stock. For the experiment, Behr-Manning technicians have installed a Hill Acme (Cleveland) machine that takes a 50-in. belt. Because they are interested in working with large amounts of stock removal, they got a 150-hp motor for the belt drive.

Conclusions so far: The job can be done with a steel knurled roll, 50 grit, all-resin bonded cloth belt running at about 2000 sfpm. Stock will feed through at 6 to 18 fpm.

The objective: Replace pickling with mechanical descaling. The outlook: Mechanical descaling will have a tough time costwise but a good chance when it can also replace the first one or two line finishing operations that follow pickling—and this looks like a good bet.

How to measure

Now **is the time to take a long, hard look**

A continuous furnace is more than just a brick-lined structure built to heat a material; it is a processing tool.

Like all processing tools, it must be evaluated on an overall basis. Fuel consumption and efficiency may be completely outweighed by many more-important economic factors centering around your workpiece, your total production program, and your work force.

Your evaluation may well prove that an investment now in Selas continuous heat processing will bring immediate returns in reduced costs and improved product quality.

To help you take this long, hard look at your heat processing equipment or requirements, Selas offers these 15 evaluation factors:

- **Material saving**
- **Product quality**
- **Floor space**
- **Product value**
- **Work in process**
- **Labor requirements**
- **Process coordination**
- **Maintenance**
- **Material handling**
- **Automatic operation**
- **Temperature control**
- **Production requirements**
- **Equipment flexibility**
- **Fuel efficiency**
- **Human element**

The factual report on the facing page tells how a steel mill took this long, hard look at its forge shop operations. Every evaluation factor proved significant: several represented important savings.

SELAS

the real cost of continuous heat processing

. . . here's how one SELAS installation stands up under that "long, hard look!"

SELAS fast-heating techniques for hot working operations are proving that steel heated rapidly—with no soaking necessary—exhibits improved metal flow beyond that of steel heated slowly and soaked.

This improved forgeability reduces power requirements at usual forging temperatures, or, for a given amount of applied power, permits an increase in degree of deformation; enables working the steel at lower temperatures with no increase in applied work or die wear.

Heating steel billets for forming of special aviation parts and other close-tolerance forgings in a large eastern steel mill, this compact rotary hearth furnace secured important savings in cost, space and labor.

Material Saving

Scale produced during the 11-min heating cycle of a 4-in. square billet, is 0.004 in. thick. This loss in weight is less than 0.25%, compared with 6-8 times that amount when heating to forging temperature in conventional furnaces. At only 1% saving, $1,000 per 40-turn month is recovered—without considering effect upon product quality, machining cost, die wear and similar side effects of excessive scale.

Product Quality

Short cycle heating, to 2250°F in only 11 min produces finer grain, greater forgeability at temperature, improved material flow in the press, and, therefore, a tougher, stronger forging.

Floor Space

The characteristic compactness of Selas high capacity equipment . . . with heat directed into the workpiece, not the work area . . . results in a 60% saving in floor space. Pitch diameter of this 11,000 lb per hr furnace is only 13¾ ft. The smallest conventional furnace offered for this duty had a pitch diameter of 21 ft covering 2½ times as much area as this Selas unit.

Product Value

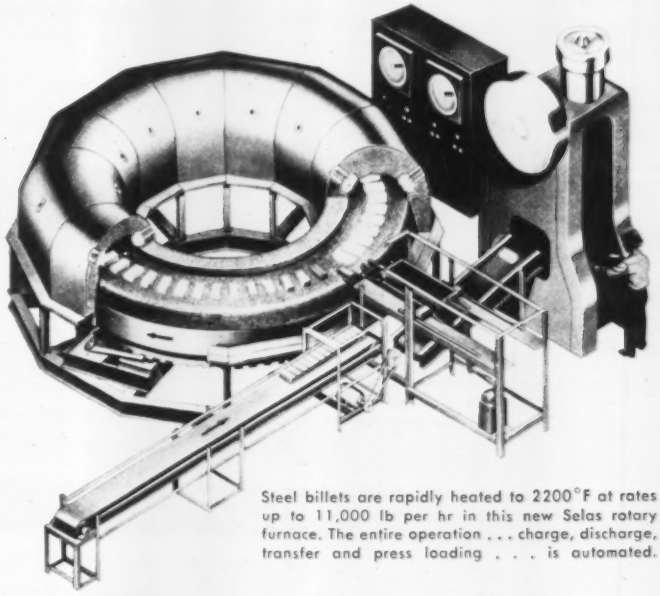
In slightly more than one 40-turn month, the product value of the billets processed equals the cost of the furnace and mechanical equipment.

Work in Process

Less than 1 ton of material is in the furnace at one time, as compared with 11 tons under a conventional 2-hr heating program.

Labor Requirements

Automatic handling of heated billets makes press operation a one-man job—saves $1300 per month.



Steel billets are rapidly heated to 2200°F at rates up to 11,000 lb per hr in this new Selas rotary furnace. The entire operation . . . charge, discharge, transfer and press loading . . . is automated.

Process Coordination

Fitted into the processing line, the furnace forms one important unit, with the press, trimmer and delivery conveyor completing the production picture. The custom-built rotary furnace was shipped from Selas, assembled in sections, and installed with minimum interference to the customer's production operations.

Maintenance

Simple, reliable operating and control equipment, rugged construction, and absence of special atmosphere equipment, simplify routine maintenance. Sectionalized construction will make eventual relining quick and economical. Furthermore, a Selas factory-based service engineer supervised installation and start-up, instructed personnel in operation and maintenance, and is available on call.

Material Handling

Completely automatic for billets weighing up to 55 lb; manual handling is used for heavier billets.

Automatic Operation

Entire heating cycle is automatically controlled, requires only intermittent loading of charge table, occasional check of temperature instruments.

Temperature Control

Billets are delivered metallurgically uniform throughout each billet and from billet to billet.

Production Requirements

The furnace supplies sufficient material for normal press operation with some reserve capacity.

Equipment Flexibility

The furnace heats billets from 3¼ in. square x 5.1 in. long, to 7½ in. square x 24 in. long. Steels handled include types 1030, 4620, 4815 and 8720.

Fuel Efficiency

Fuel cost, without recuperation, averages only 3% of raw material value.

Human Element

The automatic control eliminates variations due to the human element. Also, the furnace and press cycles are synchronized to enable delivery of a properly heated billet to the press immediately as forging of the preceding billet is concluded (in effect, pacing the press operator).

* * *

For case histories covering other steel mill heat processing operations, as well as heat treating, heating for hot working and brazing, send for reprint "An Economic Appraisal of Continuous Heat Processing." Address Dept. 26.

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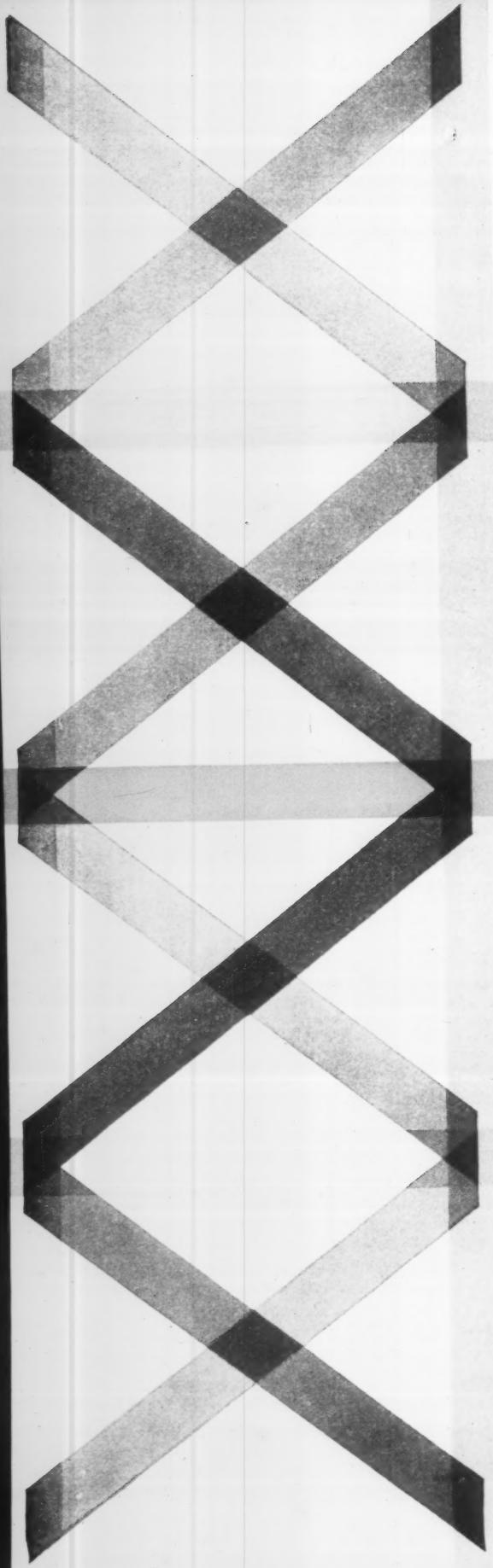

The pit nobody liked...

except our customers

This is of course our one-way fired soaking pit . . . fired from the top.

The location of the burner is only one of the features responsible
for its enthusiastic acceptance. Most important however
are the 30 years of experience and refinements
which we have built into the pit since we first introduced it.

That is why, today, it is the pit
everybody respects . . . especially our customers.

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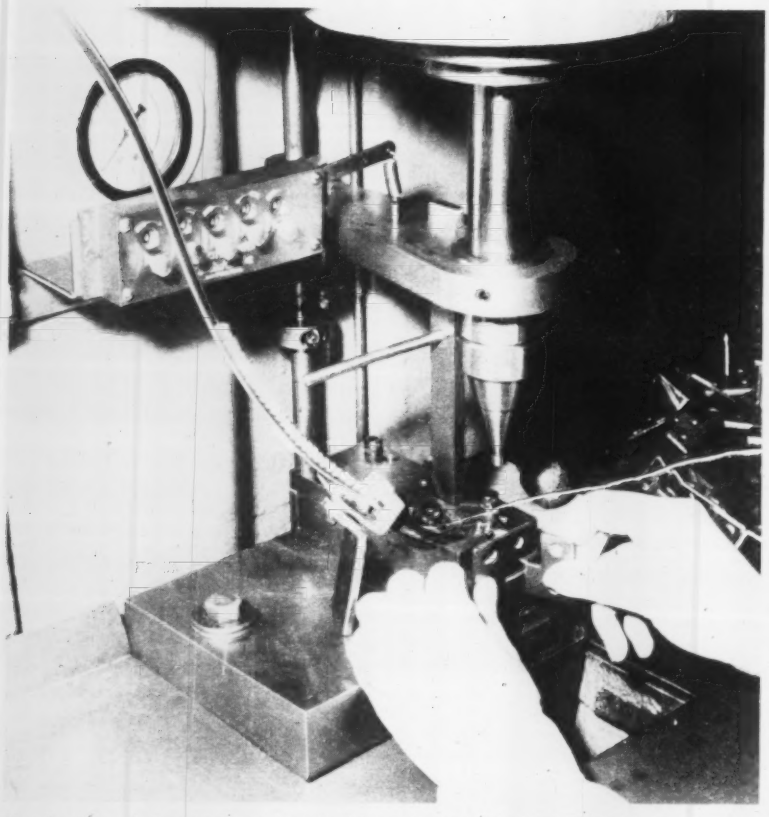
Surface



Handy drop chute opening in worktable provides rapid exit for finished assembly. Pin hinges are secured with rivets fed from the tube seen to left of press ram

Presses Speed Assembly

THE SECURING of rivets in cabinet hinges has been increased 50 per cent at Washington Steel Products Inc., Tacoma, Wash., with special press tooling and efficient use of hydraulic presses.

Inconsistent component sizes formerly left some hinges too tight or too loose. Because pressure exerted by hydraulic Multipress units is constant, all hinge assemblies now run free, eliminating rework or scrap.

The operation incorporates four, 2-ton Multipresses made by Denison Engineering Div., American Brake Shoe Co., Columbus, Ohio.

Tooling Is Effective—Three of the 2-ton units are equipped with right and lefthand hoppers, each holding about 1000 parts. Cabinet hinge pieces are hand fed to the presses, while steel rivets are fed automatically down a shopmade tube to the riveting area by a Syntron feeding system. The staked hinges are then dropped down a chute to a container.

Another press is used for sizing holes in hinges where the dimensions may vary from those of previous operations.

A fifth press, a 6-ton unit, is a general purpose machine. One of its applications is to secure a pin into a plate-shaped part for pivot hardware used in revolving cabinet shelves.

Moly Gets Boost

Two vapor deposition processes are expected to open up many new uses for the metal

WIDER USE of molybdenum is predicted by Dr. H. W. Schultze, Climax Molybdenum Co., division of American Metal Climax Inc., New York. He expects a boost in consumption to stem from the use of two new vapor deposition processes. They open up opportunities for applications when it is impractical to use the solid metal.

The coatings add corrosion resistance, wear resistance, and high strength at elevated temperatures to other materials. Coatings have high purity, machine easily, and are ductile.

First Process—Hydrogen is used to reduce molybdenum pentachloride. Hydrogen chloride and molybdenum are products of the reaction. When temperatures of around 1560° F are used, the film is completely dense with a well developed grain structure.

Oxygen and carbon must be eliminated from the deposition system because there appears to be a critical relationship between these elements and the quality of the coating.

The process is run at reduced pressure (around 0.79 in. of mercury). Since molybdenum pentachloride melts at 381° F and boils at 514° F, the vapors are easy to obtain. The process operates best in a large excess of hydrogen.

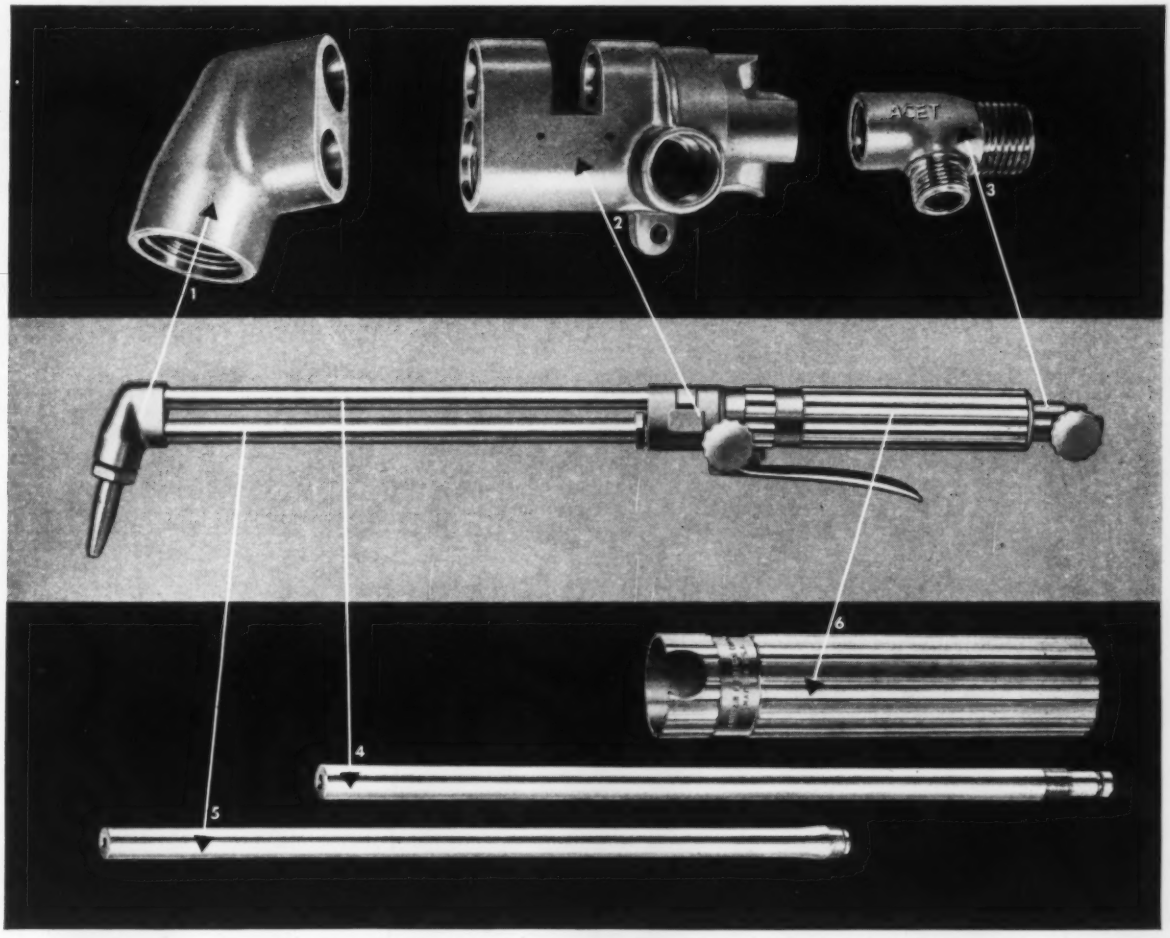
Second Process—Thermal decomposition of molybdenum hexacarbonyl can be controlled to produce coatings of molybdenum, its carbide, or combinations of the two. Other molybdenum intermetallics can be deposited by varying the operating conditions.

This process operates at lower temperatures than hydrogen reduction. Molybdenum is deposited at 662° F. At higher temperatures, the carbide is formed.

Molybdenum hexacarbonyl vapors are transported by carrier gases. When they pass over heated areas, they decompose and deposit the metal. Selected areas can be plated by using localized heating.

New uses for vapor deposited molybdenum are being studied.

SHORT CUTS to finished products.
Anaconda pre-formed mill products cut time and cost in finishing and machining—reduce scrap losses.



Linde Company's "Purox" Cutting Blowpipe, Type "E," is produced more easily and economically with these Anaconda products. **1, 2, 3.** Die-pressed forgings, with these advantages: twice-wrought metal has denseness to prevent gas leaks; toughness and strength to stand up to abuse; has uniformity, dimensional accuracy to cut machining cost—finishing reduced to bright dip. **4, 5.** Thick-wall tubes of Ambrac-850 alloy to dissipate heat rapidly, prevent overheating and "flashback"; alloy has high strength for rough service, yet has sufficient machinability. **6.** Special-shape brass tube with fluting pre-formed is furnished in long lengths ready for fast, economical screw machine operation.

Cost-cutting possibilities are almost unlimited when imagination is applied to designing with pre-formed Anaconda mill products. Simplify costly built-up assemblies with die-pressed forgings. Cut machining and scrap with tubes and solid special shapes adapted to your needs. For imaginative and practical technical help, write: The American Brass Co., Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

DIE-PRESSED FORGINGS • SPECIAL-SHAPE TUBES
EXTRUSIONS • FABRICATED METAL GOODS

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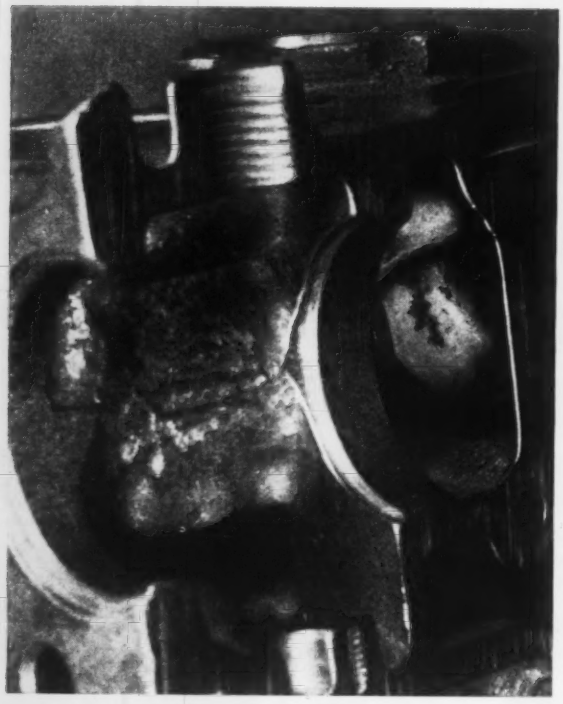
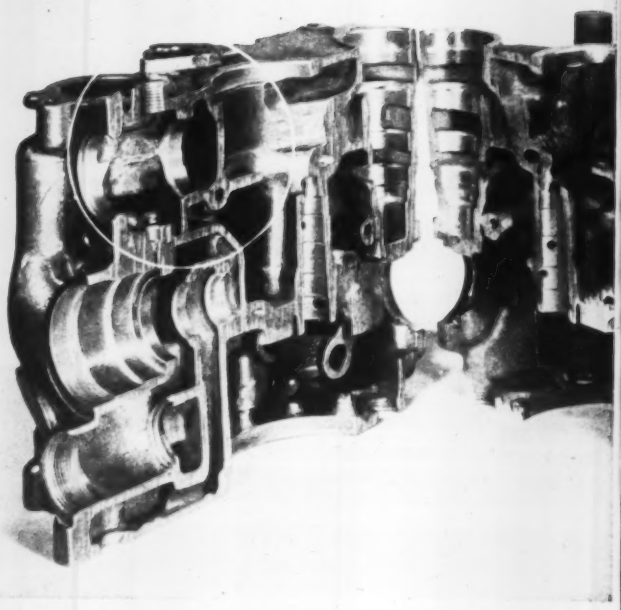
products made by
THE AMERICAN BRASS COMPANY





Sectioned body casting with inaccessible channels is typical of units which must be finished by tumbling. Biggest difficulty is caused by finishing media lodging in the channels. Photo at left is an enlargement of circled area, showing trapped stone

Abrasive Solves Finishing

It's made by pressing copper powder and abrasive into pellets and sintering them. When pellets become trapped in channels of parts, they can be dissolved by acid

ABRASIVE pellets made by powder metallurgy methods (they're soluble in acids) have solved a problem in barrel finishing at Bendix Products Div. of Bendix Aviation Corp., South Bend, Ind.

The development was reported by G. C. Madigan at the 14th annual meeting of the Metal Powder Association in Philadelphia. Side benefits of the new finishing compound are long life and good cutting action.

Channels Create Problems—The complex aluminum castings used in aircraft fuel systems have many internal channels which can trap finishing materials. Large particles which will not enter the channels can't always be used because they will not finish small recesses.

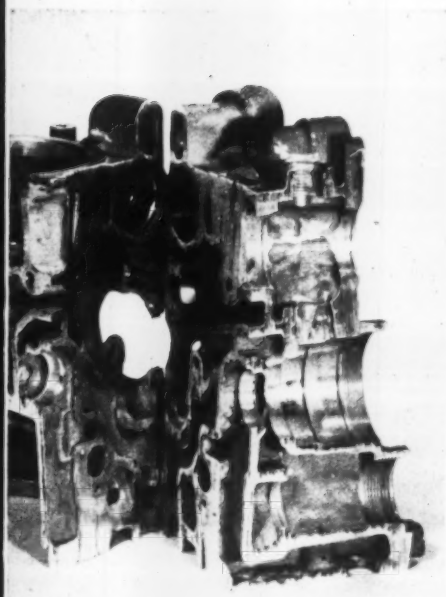
Many times, large finishing media break, and the particles lodge in the channels. The obstruction must be removed by shaking it free or inserting a tool and trying to fracture the stone.

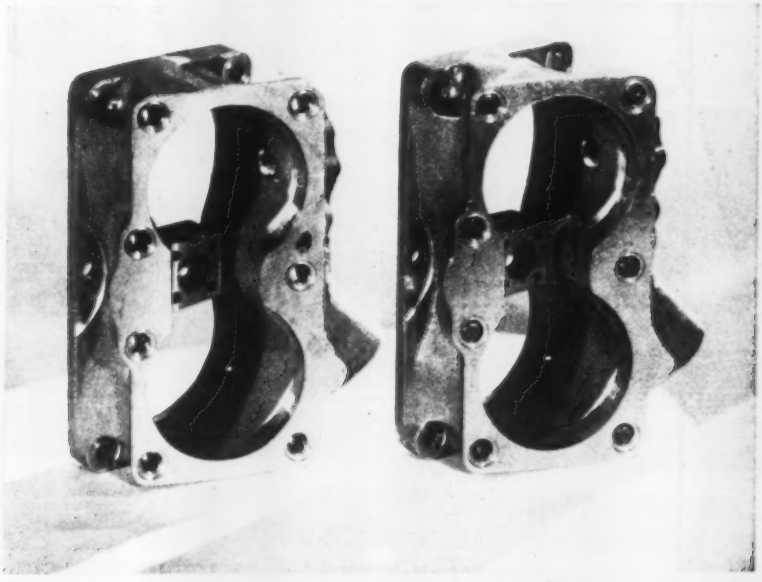
Requirements of Media—In attacking the problem of finding a suitable media, Bendix defined six requirements:

1. Ease of removal.
2. Strength to resist fracture.
3. Wear resistance for reasonable life.
4. Ability to cut burrs and sharp edges rather than peen them over.
5. Adaptability to the variety of materials used in the parts.
6. Reasonable cost.

Soluble Media Is Answer—The abrasive is in a metal powder matrix which is attacked by a solvent that does not damage the material being finished.

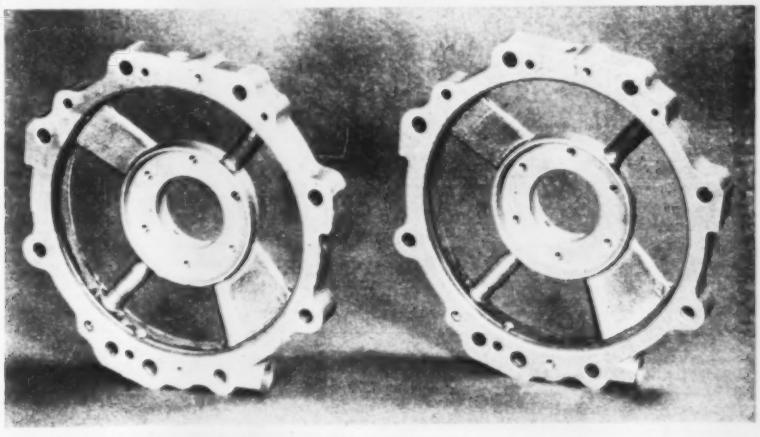
Initially, copper pellets were impregnated with abrasive by tumbling. They were unsatisfactory because of the rapid loss of abrasive. But the cutting action, ease of removal, and resistance to fracturing fitted requirements. Other unsuccessful tries included impregnating the abrasive in molten cop-





Major advantage of abrasive pellets with a copper matrix is the ability to dissolve the matrix with an acid. The pellets shown lodged in the threaded holes of this casting can be removed by dipping in acid that will not attack aluminum

Problem



A 356-T6 aluminum alloy casting before and after barrel finishing in the powder metal media. The machined surface finish has been reduced from 80 rms to 20 rms and all burrs removed. The surfaces can be used with gasket and O-ring seals

per and casting abrasive impregnated pellets.

The method that did the job was pressing a blend of copper metal powder and abrasive into pellets in a die. Pellets that are trapped in the part can be dislodged by placing the casting in an acid.

Pellet Does Better Job — The abrasive impregnated metal matrix has other advantages: It forms small radiuses more rapidly than the media Bendix was using. Also, the wear life is better.

The new abrasive has been tested on soft and heat treated aluminum alloys and hardened steel. One part of Type 416 corrosion resistant steel had required hand deburring and a barrel finish to blend the edges. Now large burrs are removed by rough cutting in the barrel, and the part is finished in a brightening compound. The surface finish entering tthe barrel is 45 rms on a flange and 120 rms on the shaft. After barrel finishing, finish is 20 rms on the flange and 30 rms on the shaft.

Thirty minutes in the new media reduced the roughness of a machined surface on a 356-T6 aluminum casting from 80 to 20 rms. The finished surfaces were suitable for use with gasket and O-ring seals. A fine radius is cut on the edges of the casting.

Tests Still Going On—The metal powder media evaluated have been small cylindrical pellets produced by pressing and sintering. The cost of dies has limited the investigation to simple configurations.

Bendix predicts improvements when more suitable geometric shapes are produced. Other methods of production are being considered. One is extruding material in a process similar to that used for aluminum powder products. Also, the further use of metal powder techniques will offer a wide range of potential metal and abrasive combinations, so that finishing materials can be tailormade for finishing applications.

For a large
CANADIAN STEEL PLANT

. . . this modern,

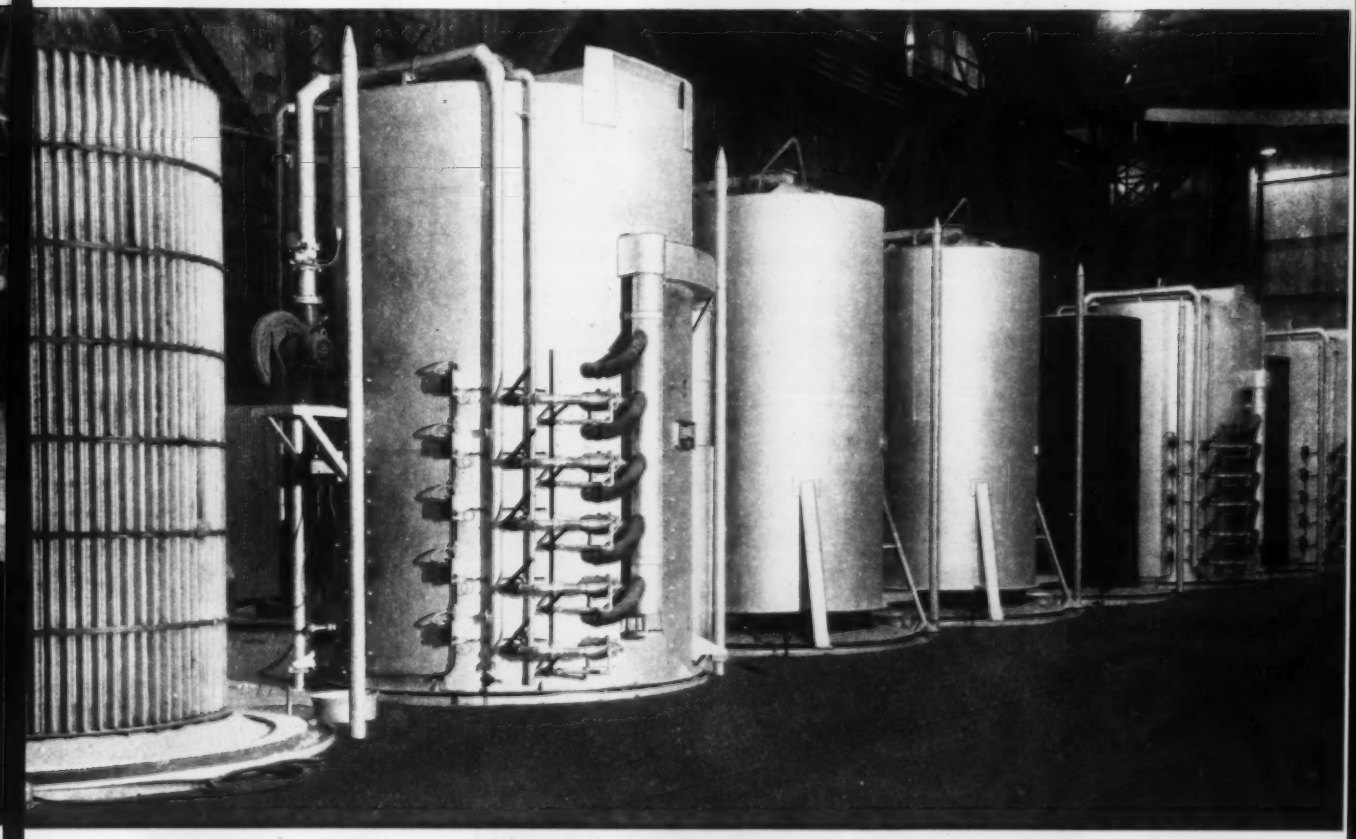
MULTI-STACK and SINGLE STACK

● ALL the advantages of combined multi- and single-stack sheet annealing facilities are provided in this Swindell Canadian installation—*plus* the economies in inventory and maintenance conferred by a single make of furnace, with major components interchangeable throughout. Six single-stack furnaces and 18 bases with cooling covers join with three four-stack furnaces and nine bases to assure complete flexibility in annealing operations at all times. ● Both furnace types feature SWINDELL *horizontal radiant tubes*—for controlled vertical temperature distribution, longer life and better heat application—and the new SWINDELL *high volume convection system*, which maintains the rugged steel mill type design for which our equipment is noted. ● Let us consult on your requirements!

flexible installation of

ANNEALING FURNACES

—providing positive control of vertical temperature distribution plus new SWINDELL high volume convection system

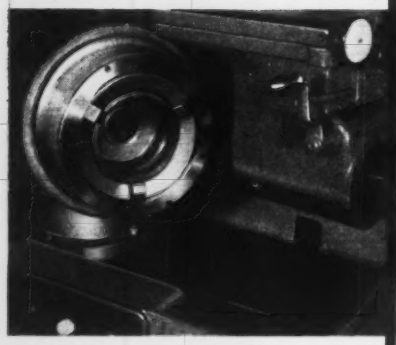


Swindell-Dressler Corporation provides a complete engineering service for the steel industry in the design and construction of new plants, and modernization of existing facilities. Consultations arranged gladly on request.

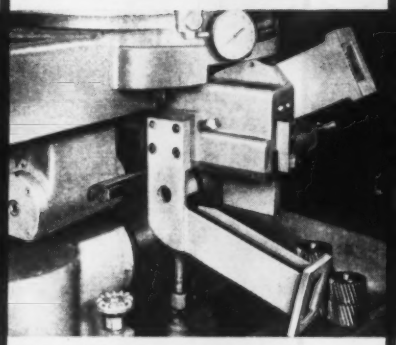
SWINDELL-DRESSLER *Corporation*

DESIGNERS AND BUILDERS OF MODERN INDUSTRIAL FURNACES

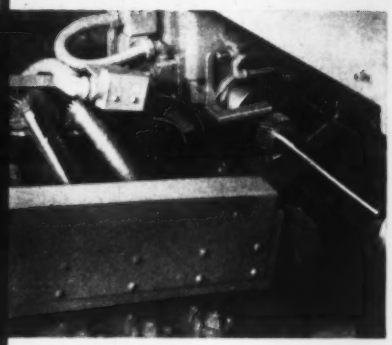
PITTSBURGH 30, PA.



INTERNAL 870-C, only vertical internal shaver where a heavy mass (chuck and gear) drives the cutter. Reversals impose no abnormal loads on cutter teeth. This prevents excessive cutter breakage. Extras—plunge shaving.



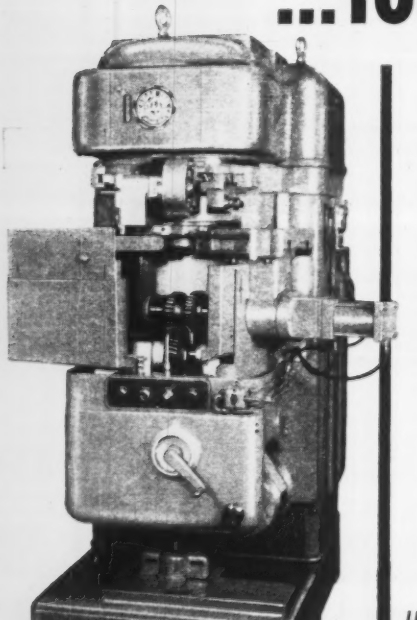
UNDERPASS 870 Gear Finisher for fastest shaving—long or short run—of spur, helical, herringbone or shoulder gears. Extras—the new knee, new cutter-saving drive, crowning cutters, easy to set up and operate.



READILY AUTOMATED—Michigan 870 and 870-A shavers can be partly or fully automated. They are the only vertical shaving machines featuring 'straight-through' automation. They can be automated to load or unload from front or back.

TO GET BETTER GEARS AT LOWER COST

...look for the extras



Michigan's latest 870-series Gear Finishers are loaded with EXTRAS. A new knee assembly brings all controls to the front—and puts the operator closer to the work. Operators like ease of setup, vernier and dial locating, and the simple locking. Work located above cutter makes manual loading safer, automatic loading easier. Machine ways are up out of the way of contamination by chips or foreign matter. Timken bearings, extra-rugged fully splined shafts and a shock-absorbent drive, provide a sturdy no-backlash drive. Starts and stops are cushioned to keep cutters operating longer. Every installation has the EXTRA of being individually Michigan Application Engineered to cut costs.

Write for descriptive literature.

UNIVERSAL 870-A (with new knee) permits adjustable automatic upfeed to be used with any of the three basic shaving methods. Extras—faster approach, longer tool life. Optional crown shaving attachment (permits shaving of a series of gears with varied crowns using only one tool).

May we have the Michigan Tool engineering representative in your area show you how Michigan gear finishing can make your geared parts even better.

MICHIGAN TOOL Company

from blank to finished gear

7171 E. McNICHOLS RD., DETROIT 12, MICH., U.S.A.
IN CANADA: COLONIAL TOOL CO. LTD.

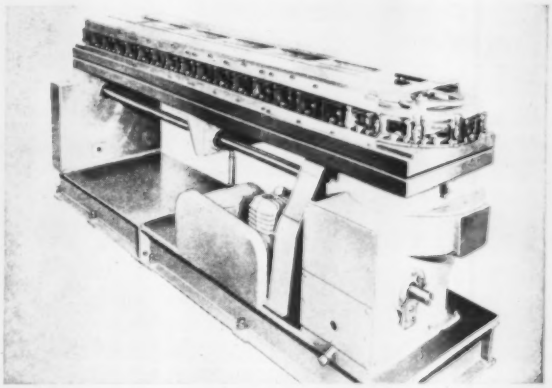
Indexing Chassis Shipped Ready for Installation

A precision, conveyor type, indexing chassis, Model ST-A18, for automatic assembly or production is available with 27, 35, 43, or 51 work carriers. The carriers are integral with the conveyor chain links that position the work accurately to each station.

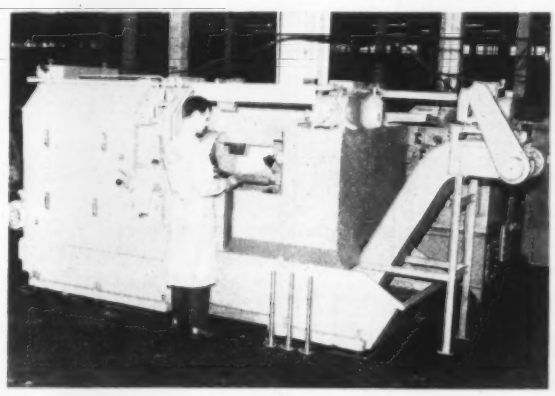
Indexing takes place during 120 degrees of rotation of the camshaft, dwell or work time 240 degrees. Additional dwell can be obtained by special drive and timer.

The chassis provides straight line, intermittent motion for a wide range of automatic machines.

Tools or assembly devices to meet individual requirements can be mounted on the units. *Write*: Standard Tool & Mfg. Co., 237 Laurel Ave., Kearny, N. J. *Phone*: Webster 9-5500



Lathe Spindles and Tailstock Centers Index



On this four-spindle copying lathe, Model 412/25, the work is chucked between centers and the driving spindles and tailstock centers index together through the work positions.

Copy turning is done by template operated, hydraulic copying slides which can be mounted at the three work stations. For additional operations, forming arms and cross slides can be mounted at the same work stations. An infeed or necking slide can be added at the loading station.

Because all operations are performed with the work mounted between the same centers, concentricity of all diameters is assured. *Write*: New Britain-Gridley Machine Div., New Britain Machine Co., New Britain, Conn. *Phone*: Baldwin 9-1641

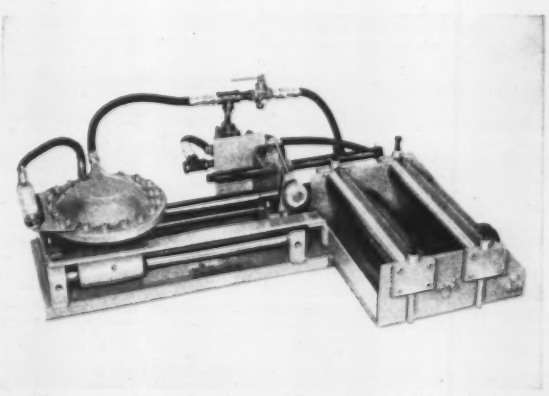
Pneumatic Press Feed Designed for Mobility

Ses-Matic air feeds for handling coiled materials can be moved from one punch press to another. They can be easily mounted on side brackets. It is necessary to mount a valve that can be actuated by the ram or die.

Three models accommodate stock widths of 1, 6, 12, 18, 24, or 30 in., and thicknesses up to 0.090 in.

They come with built-in speed control valves. Large gripper area for clamping pressure is a feature.

Optional equipment includes four roll, nonpowered, stock levelers for removing coil bends from mild steel. They mount directly to the air feed and utilize its power to pull the stock through the rolls. *Write*: Special Engineering Service Inc., 8161 Livernois Ave., Detroit 4, Mich. *Phone*: Temple 4-8700



(For more New Products, please turn to Page 106)

He proved that 1 wheel could

Jim Frederick's eleven years of experience as an abrasive engineer have covered most of the problems in the book. That's why he so often finds practical solutions when he runs into problems that are *not* in the book.

Steelcraft operator John Kulpa checks performance of new Bay State wheel on high speed steel form tool job. (Guard removed for photography).

outperform 3 at Steelcraft Tool Co.

Steelcraft Tool Co., of Detroit, used to use three different grinding wheels to rough and finish the angles on straight high speed steel form tools . . . one specification for roughing, two for finishing. Then Bay State came into the picture through distributor Jim Frederick of Detroit's Industrial Abrasives Co. He showed them how a single Bay State wheel specification would cut *fast* for roughing and *fine* for finishing.

Result: The new wheel eliminated the need for repeated wheel changes and both Roland Belardnelli, co-owner of Steelcraft, and John Kulpa, chief operator, rate it A-plus for speed and precision, too.

Why not talk to *your* Bay State distributor? Chances are he'll come up with more than one cost-saving idea for your grinding operations.

Better grinding at lower cost – that is his business.

BAY STATE WHEELS of PROGRESS

BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. *Distributors:* All principal cities.

NEW PRODUCTS and equipment

Ovens Conserve Space

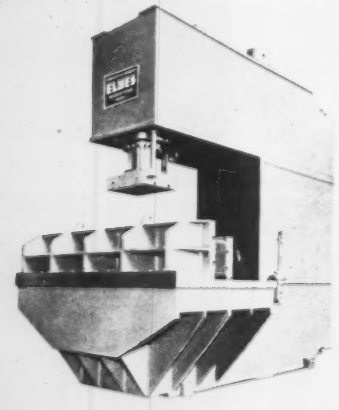
Industrial ovens, Types 110 and 40, for drying, baking, and curing have built-in recirculating air passages. Floor space requirements are minimized, since all equipment, except for the centralized control panel, is mounted on top of the oven.

An operating temperature range of 200 to 600° F is provided by a pressure-mixing type, direct-fired gas burner. Electric, oil, or steam heating equipment is also available. *Write*: Kirk & Blum Mfg. Co., 3100 Forrer St., Cincinnati 9, Ohio. *Phone*: Elmhurst 1-1400

Press Does Double Duty

This hydraulic press is a 300 x 150-ton single unit in which the functions of a C-frame press and a horizontal bulldozer are combined.

Specifications include: A 300-ton vertical ram with a 30 x 24-in. platen, a 30-in. stroke, an opening of 54 in. and a 120 x 72-in. bed. The horizontal ram has a 150-ton capacity, a platen size of 30 x 24 in., a 24-in. stroke, a 72½-in. opening, and a removable resistance head measuring 120 x 24 in. *Write*: American Steel Foundries, 1150-X Tennessee Ave., Cincinnati 29, Ohio. *Phone*: Redwood 1-9210



Screws Fed Economically

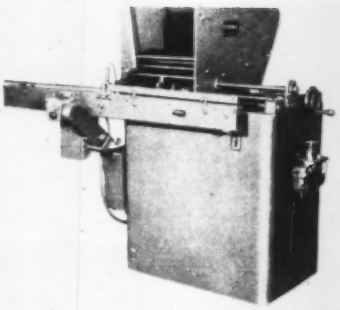
The automatic, precision Zipp screw feeder fits all makes of pneumatic tools. From 2 to 25 seconds can be saved at each station for each work unit, especially where small screws increase waste because of operator fumbling.

The feeder will drive any type headed screw. It may also be attached to nut runners, impact wrenches, pneumatic cylinders, and electric drivers. *Write*: Dept. 131, Zipp Screw Feeder Div., R. C. Neal Co. Inc., 76 Pearl St., Buffalo 2, N. Y. *Phone*: Mohawk 1-1110

Feeder Is Versatile

Model 1700 C is a fully automatic bar feeder with a wide range of speed and capacity. It replaces hand feeding on centerless grinders, milling machines, and many special-operation units.

It can be used for bar stock up to 31 in. long and 2 in. in diameter, with belt speed variable from 5 to 20 fpm. Other lengths, diameters,

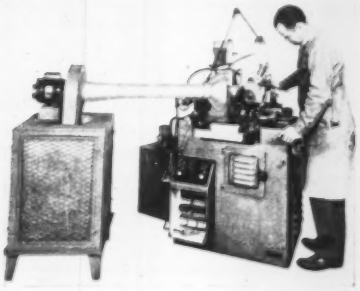


and speeds are available without special tooling.

A convenient handwheel adjusts the feed hopper to fit any desired length from 6 to 31 in. Cycling rate may be controlled by conveyor speed, photoelectric relay, or mercury switch. *Write*: Feedall Inc., 38399 Pelton Rd., Willoughby, Ohio. *Phone*: Whitehall 2-8100

Mist Hazards Eliminated

Torit mist collectors use no high voltage electronic equipment. The three models are for use in wet machining operations of automatic screw machines, grinders, and other mist producing operations.



They eliminate unpleasant and toxic mists, reduce plant maintenance costs, eliminate slippery floors, and reduce fire hazards. *Write*: Dept. KP, Torit Mfg. Co., Walnut and Exchange Streets, St. Paul, Minn. *Phone*: Capitol 2-4419

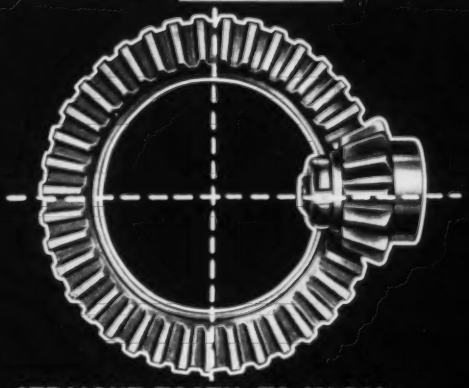
Conveys Around Curves

A turning conveyor carries any type sheet material around a curve during manufacture, distribution, or assembly. Grooved rollers and wire spring belts transmit power from shaft to shaft in a circular path.

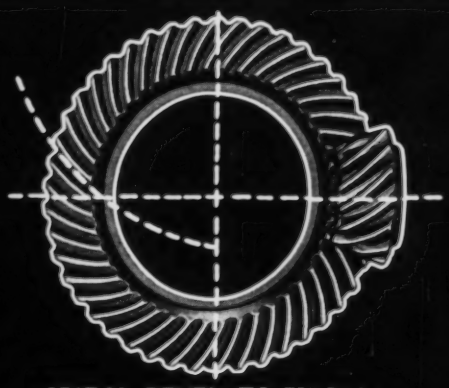
The top surface is level but gives controlled turning action to sheets, singly or in stacks. Curved sections

(*Please turn to Page* 111)

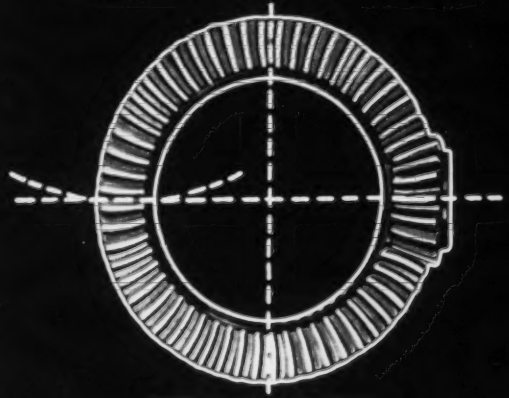
DO YOU KNOW YOUR BEVEL GEARS?



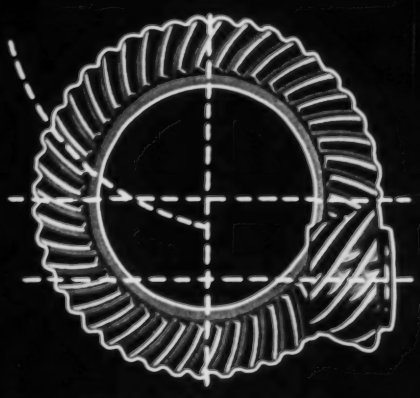
STRAIGHT TOOTH (TO 98" DIA.)



SPIRAL BEVEL (TO 72" DIA.)



ZEROL (TO 72" DIA.)



HYPOID (TO 48" DIA.)

phillie gear makes them all

Send for our 72 page "Gear Book" G-127. Please use your Business Letterhead when requesting a copy.

Phillie Gear is equipped with the "know-how", the manpower, and latest facilities to manufacture the entire family of Bevel Gearing—sizes and capacities range from the very small to the most massive sizes obtainable. Ultra Precision ground tooth Spiral Bevel Gears are available up to 23" diameter.

All types and sizes of gears produced by "Phillie" are made to the highest standards of Engineering skill and exactitude—they are the culmination of over 65 years' experience, and are produced on the very latest machines by skilled craftsmen—In a nutshell, Phillie Gear offers, not only the finest gears obtainable, but prompt and courteous service as well.

SPUR • HELICAL • SPUR INTERNAL • HELICAL INTERNAL • RACK • HERRINGBONE • WORM • NON-METALLIC • SPLINES • CONIFLEX BEVEL • SPIRAL BEVEL • ZEROL • HYPOID • INTERMITTENT • SPROCKETS • CONTRACT MACHINE WORK

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Virginia Gear & Machine Corp. • Lynchburg, Va.

Copper-Coated Strip, shown before heat-treat at Victor Adding Machine, prevents distortion of precision parts during case hardening of working surfaces.

Plain Steel number dials are welded to precision-made Thomas Strip.

Victor Adding Machine, Others Cut Costs, Improve Products With Thomas Strip

Manufacturers across the country are reporting new cost-cutting, quality-boosting results from their use of Thomas Strip's cold-rolled specialty steels.

At Victor Adding Machine Company, Chicago, for example, copper-coated Thomas Strip slashed one major production cost by 50% and made big savings in another operation.

Fred E. Rolli, Victor's chief engineer, says Thomas Strip is "the greatest single improvement in our production process in the past 10 years."

Here's why:

Victor's deluxe Model 75 contains 2500 individual parts, 68 of the most critical being made from Thomas Strip, both plain and copper-coated.

• **Distortion-Free.** Load-bearing parts—with tolerances under .001 inch, plus or minus, have to be case hardened along their sheared edges. Heat-treating plain steel (15 minutes at 1450 degrees) can warp the stamping. Often the expensive straightening process caused tiny surface cracks which elongated the part past the .001-inch tolerance.

To solve this problem, Victor turned to copper-coated Thomas Strip. Since the electrolytic layer of copper stops off or blocks carburizing gases, flat surfaces of the stamped part are protected. Then, plain steel edges case harden properly. The part retains flatness and proper ductility. Since there is no distortion, piece straightening of copper-coated parts is eliminated. This accounts for the 50% reduction of the total straightening operation at Victor.

• **More Savings.** A second economy begins in the punch press. Die-life is a vital factor of production costs. Like other users of copper-coated Thomas Strip, Victor finds die-life between grindings is extended as much as 33%. This is due to the lubrication effect of the copper coating.

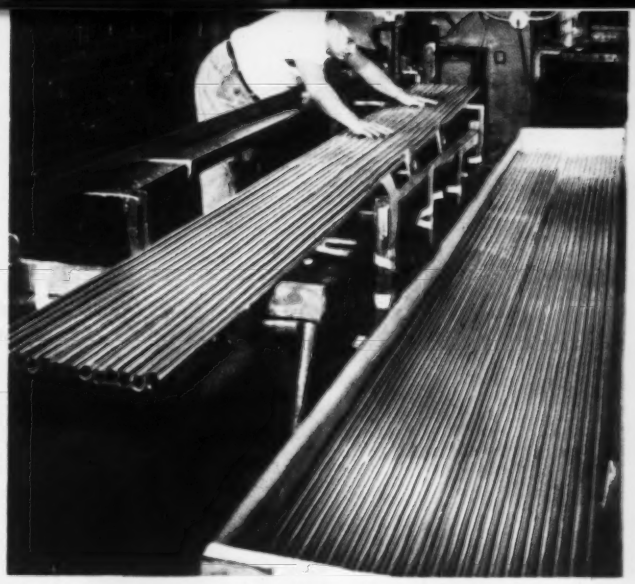
A third benefit: uniform temper and on-spec composition of Thomas Strip mean clean, burr-free sheared edges. Burrs, like slivers, are banes of close-tolerance operation of machine parts.

• **Satisfied.** Engineer Rolli sums it up by saying:

"Elimination of straightening is one of the biggest boons to small parts manufacturers that I've seen in the business. Even if Thomas Strip had no other benefits than eliminating a production problem, using copper-coated strip would be entirely worthwhile."

Thomas Strip's advantages are the same throughout industry. Other examples of how manufacturers cut costs, improve products—get higher profits and increase sales are shown here.

Thomas Strip's newly expanded and diversified production facilities give you the full range of products on these pages, in addition to zinc and chrome coatings . . . or hot-dip coated with lead alloy or tin. Uncoated Thomas Strip products include low carbon, alloy and high carbon spring steel grades.



Steel's Strength, Brass' Beauty are combined economically to form lock-joint tubing at Van Huffel Tube Corp., Warren, Ohio. Largest producer of rolled shapes in the nation, Van Huffel uses clear-lacquered, brass-coated Thomas Strip to make tubing for variety of products, including curtain rods and lamps. Thomas' brass and lacquer coatings easily withstand forming pressures and resist roll damage to the finish. Tubes usually need no further surface finishing. Van Huffel has been a satisfied Thomas Strip user for 26 years.

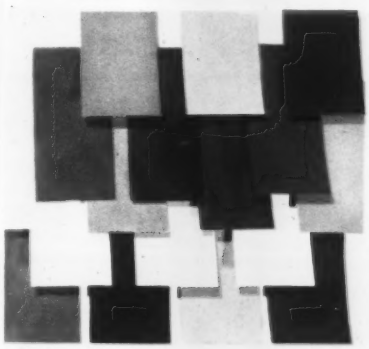
Capacity Up 25%, Sales Up 45% since Automatic Wire Goods Manufacturing Co., Bronx, New York, started using Thomas' nickel-plated strip 5 years ago. President Irving Spiegel says Thomas Strip boosted quality, kept production costs constant, improved appearance and design of his extensive Jewel and Automatic kitchen utensil lines. Thomas nickel-coated strip assures a mirror-like finish, an important feature of sales appeal in the highly competitive utensil field.

All Thomas Strip products can save you money and enhance your product in six important ways:

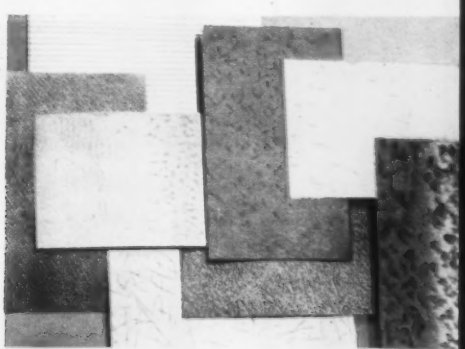
- **Fabricates Easily.** Coated steels stand fully as much fabrication as uncoated strip.
- **Longer Die Life.** Most coatings lubricate dies, reduce wear and increase tool life.
- **Maximum Pieces Per Pound.** Precision rolling to extremely close size tolerances gives more square feet of strip per ton.
- **Lower Plating Costs.** Coatings serve as final product finish or as base for further plating or painting.
- **Speeds Fabrication.** Thomas Strip coatings eliminate costly intermediate fabricating steps such as cleaning, buffing, even plating.
- **Steel's Strength and Economy** are combined with beauty and utility of more expensive metals.

All the savings and benefits Thomas Strip specialties are giving to fabricators shown here are available to you. A national sales staff—familiar with design and fabrication advantages of Thomas Strip is ready to serve you.

Write for samples, and additional cases of users' actual experiences with Thomas Strip products. Do it today!



The Rainbow's Range of colors, lacquered or painted on precision cold-rolled strip will solve your decorative and design problems. Thomas Strip's new lacquer line is the industry's finest. It's capable of wider widths in a fuller range of colors, especially pastel shades. Besides appearance, lacquer-coated steel is rugged and can be readily formed or mildly drawn without damage to the product's finish.



Unlimited Design opportunities come with pattern-rolled strip. New facilities enable Thomas to offer wider widths of any design and coating, including clear or colored lacquer. Users agree pattern-design enhances product sales appeal, permits production economies by eliminating piece buffing and costly further finishes. Pattern-designs stand up under tough forming operations and still offer attractive, flaw-free surfaces.

Thomas Strip® Division

Pittsburgh Steel Company

Grant Building · Pittsburgh 30, Pennsylvania

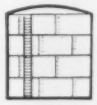
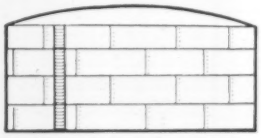
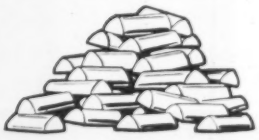
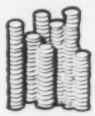
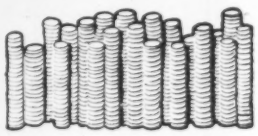
District Sales Offices:

Atlanta	Cleveland	Dayton	Los Angeles	Pittsburgh
Chicago	Dallas	Detroit	New York	Tulsa
		Houston	Philadelphia	Warren, Ohio

WANT TO CUT PICKLING COSTS?

YOU CAN WITH **ACP RODINE**

Even though you are now using an inhibitor in your pickling bath, highly concentrated ACP RODINE can cut pickling costs. Savings in acid, steel and money, as shown in the chart, are based on: a monthly steel production of 15,000 tons; a selling price of $140.00 a ton; and an acid cost of $ .01 a pound.

ACID SAVED	3 lb. per ton	 45,000 lb. per month	 540,000 lb. per year
STEEL SAVED	1½ lb. per ton	22,500 lb. per month	 270,000 lb. per year
DOLLARS SAVED	$.135 per ton	 $2,025.00 per month	 $24,300.00 per year

For complete information about ACP RODINE and the savings it makes possible, write us at our Ambler offices. It will mean no obligation whatsoever.

RODINE is a registered trademark of American Chemical Paint Company

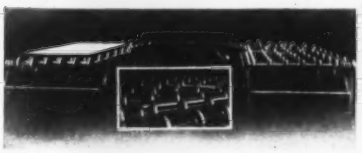
CHEMICALS ACP PROCESSES

AMERICAN CHEMICAL PAINT COMPANY, Ambler 19, Pa.

Detroit, Mich. St. Joseph, Mo. Niles, Calif. Windsor, Ont.

New Chemical Horizons for Industry and Agriculture

NEW PRODUCTS and equipment

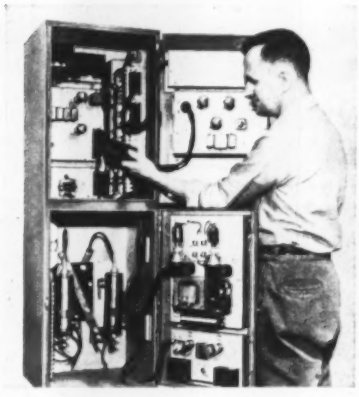


can be provided for any arc and coupled to straight sections of any length—all driven by a single power source. Variable speed is available. *Write*: Power-Curve Conveyor Co., 2185 S. Jayson, Denver 23, Colo. *Phone*: West 5-0881

Welder Control Flexible

These nonsynchronous, electronic, combination welder controllers provide high speed production line performance and flexibility to meet changes in materials and designs.

Individual panels for sequence timing, power supply, valve operation, and contactor firing are included.

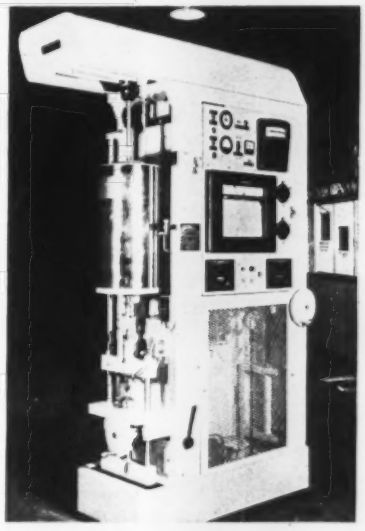


Provision is made for the plug-in addition of heat control, slope control, current regulator, forge delay, dual control functions, and other special features. *Write*: Square D Co., 4041 N. Richards St., Milwaukee 12, Wis. *Phone*: Edgewood 2-2000

Tester Is Sensitive

The creep rupture tester, Model EE, has new instrumentation with improved electrical components which permit more sensitivity in recording results of creep rupture, relaxation, and hot tensile tests.

Capacity is 20,000 lb. The unit is available with a kanthal-wound furnace for a maximum of 2200° F



or a platinum-wound furnace for temperatures up to 2600° F.

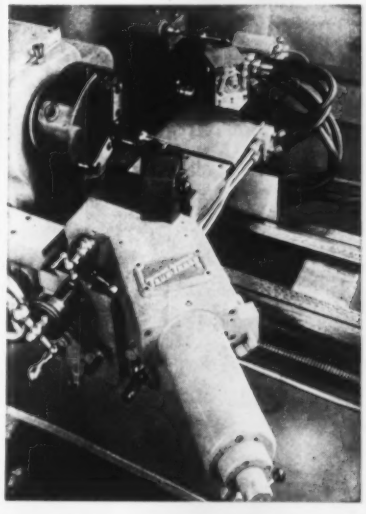
The furnaces are the power-positioning type which transfer power from zone to zone without external shunts or resistances.

A precision way jack screw is used for loading and elongation takeup on the specimen. *Write*: Arcweld Mfg. Co., P. O. Box 311, Grove City, Pa. *Phone*: 1470

Tracer Converts Lathes

A tracer attachment converts standard lathes to contour machines. Adaptable to virtually all makes of lathes, it enables unskilled operators to do step-shaft tracing, contour turning, and facing.

Included with the attachment are cross and tool slides which are cast of Meehanite and finished to precision tolerances. *Write*: True-Trace



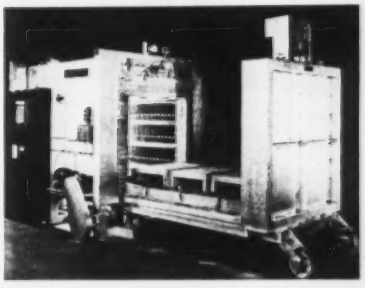
Sales Corp., 9830 E. Rush St., El Monte 50, Calif. *Phone*: Cumberland 3-4761

Furnace Uses No Rails

A car bottom furnace, Model WF9924CBE, needs neither pits nor rails below floor level. The car is motor driven (rack and pinion). Wheels inside the furnace carry the car as it enters.

Heating elements are mounted on both side walls, the back, the door, and the car. They are connected to a 440 volt, 3-phase, 60-cycle contactor and draw 100 kw.

The furnace shown is equipped with a Leeds & Northrup Model S strip chart recording controller, and

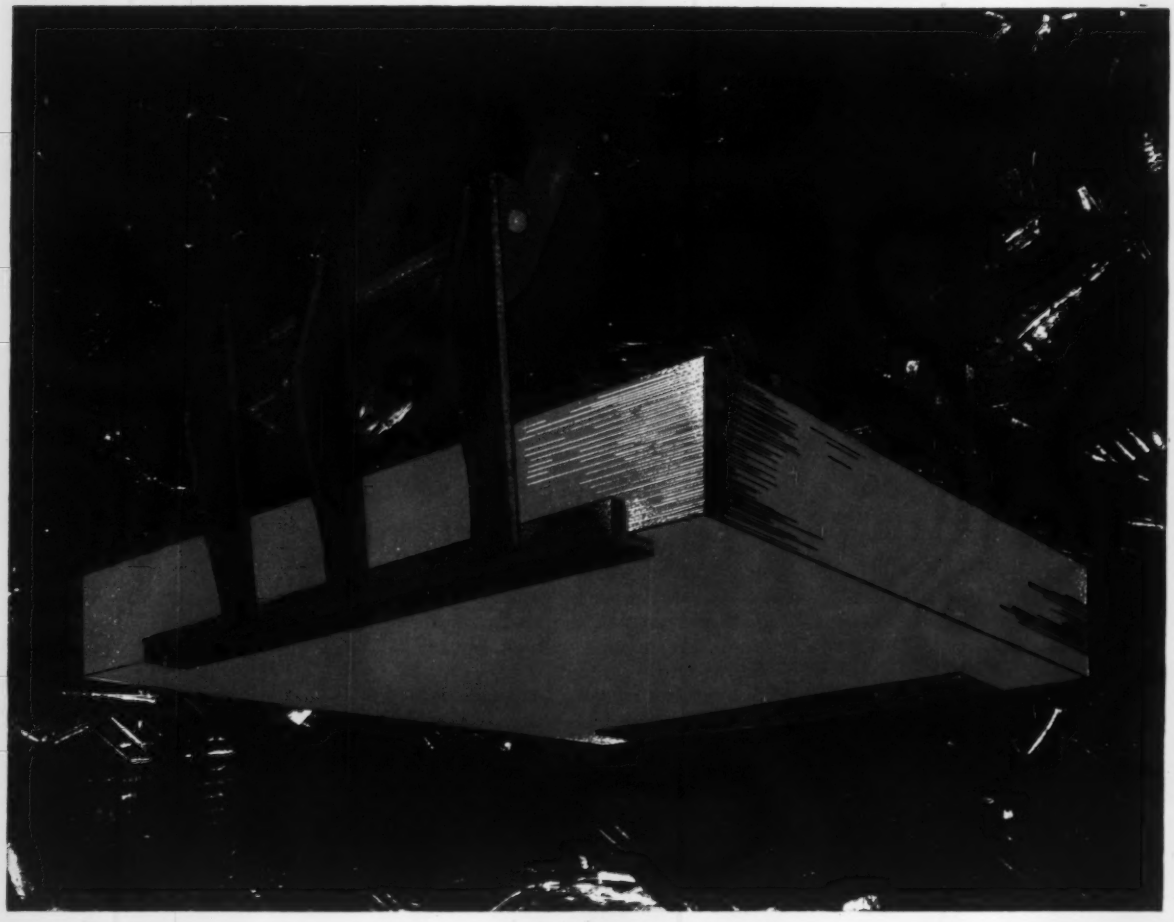


has a Wheelco instrument to cut off the furnace if it should overshoot the set temperature. *Write*: Dept. 9, Waltz Furnace Co., Symmes Street, Cincinnati 6, Ohio. *Phone*: Capitol 1-2444

Gage Has 0.0001-in Scale

An all-purpose inspection and quality control instrument, the DR-25 optical gage measures depth, thickness, height, and diameter.

Measuring range is continuous from 0 to 3 in. with no masters or set gages needed. Measurements are read directly on an illuminated, magnified scale graduated in clearly defined least-reading intervals of



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Steel service centers stock USS Hot-Rolled, Cold-Rolled, Galvanized, Galvannealed and Paintbond Sheets, and USS Hot-Rolled Strip.

Remember, as a part of the American Steel Warehouse Association, your steel service center has been set up specifically to handle your immediate steel demands. So the next time you order steel sheet and strip from your steel service center, be sure to specify *USS Sheet and Strip.* *USS is a registered trademark*

USS United States Steel

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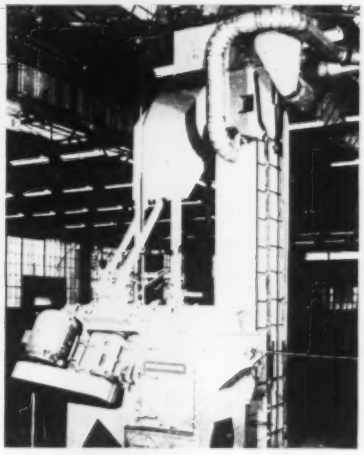
0.0001 in., with an accuracy of 0.000025 in. *Write*: Bausch & Lomb Optical Co., 68049 St. Paul St., Rochester 2, N. Y. *Phone*: Locust 2-3000

Rod, Bar Stock Cleaned

Cabinets for descaling wire rod and bar stock make it possible to automate blast cleaning and cold drawing, cold heading, or patenting into one continuous operation.

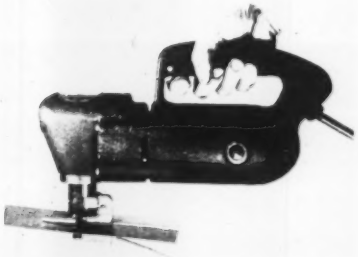


In addition to faster cleaning, this in-line airless process eliminates multiple handling, acid, and acid disposal problems often associated with pickling. *Write*: Wheelabrator Corp., 1157 S. Byrkit St., Mishawaka, Ind. *Phone*: Blackburn 5-2141

No-Distortion Nibbling

A portable nibbler cuts woven wire, wire cloth, and gaskets up to 3/16 in. It can be table-mounted.

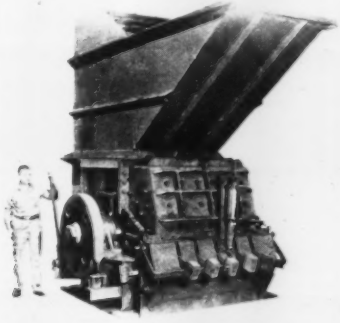
The unit will cut sheet metal without distortion while removing a continuous ¼-in. strip.



Two models are available, one for cutting up to 3/32-in. wire and the other for 3/16-in. wire. They operate on 110-volt alternating or direct current. *Write*: Modern Mfg. Co. Inc., 680 Davisville Rd., Willow Grove, Pa. *Phone*: 4820

Unit Crushes Scrap

The 48-50 metal crusher reduces metal turnings, aluminum castings (crankcases, pistons, pots and pans), and other forms of scrap.

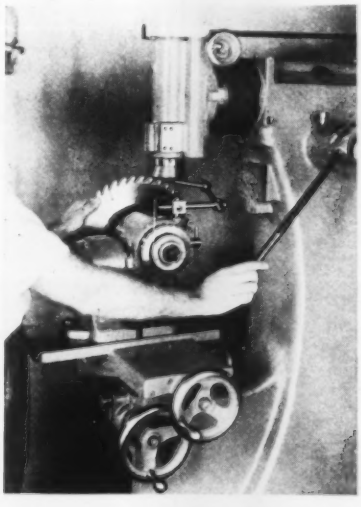


It operates at 20 to 40 tons an hour. It is recommended for large scale operations in industrial plants, aluminum smelters, and metal recovery yards. *Write*: American Pulverizer Co., 1249 Macklind Ave., St. Louis 10, Mo. *Phone*: Sterling 1-6100

In-Plant Saw Sharpening

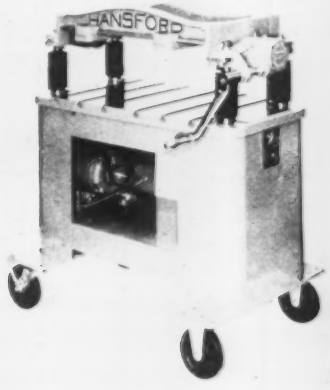
Metalworking plants using circular saws can do their own sharpening with the Ace grinding machine.

The unit is simple to set up and use. It can handle high speed steel or carbide tipped saws. It will also sharpen spiral cutters, reamers, hobs, spot facers, straight and spiral cutters, and all general purpose tools. *Write*: Oliver Instrument Co., 1442 E. Maumee St., Adrian, Mich.



Small Dies Handled

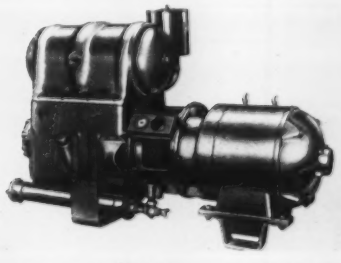
A small-sized die handler, Model 1918, has all-cast construction, open top platen, and four lead screws with thrust bearings.



Motorization of vertical movement provides a time saving rapid traverse. *Write*: Hansford Mfg. Corp., 1239 University Ave., Rochester 7, N. Y. *Phone*: Greenfield 3-3660

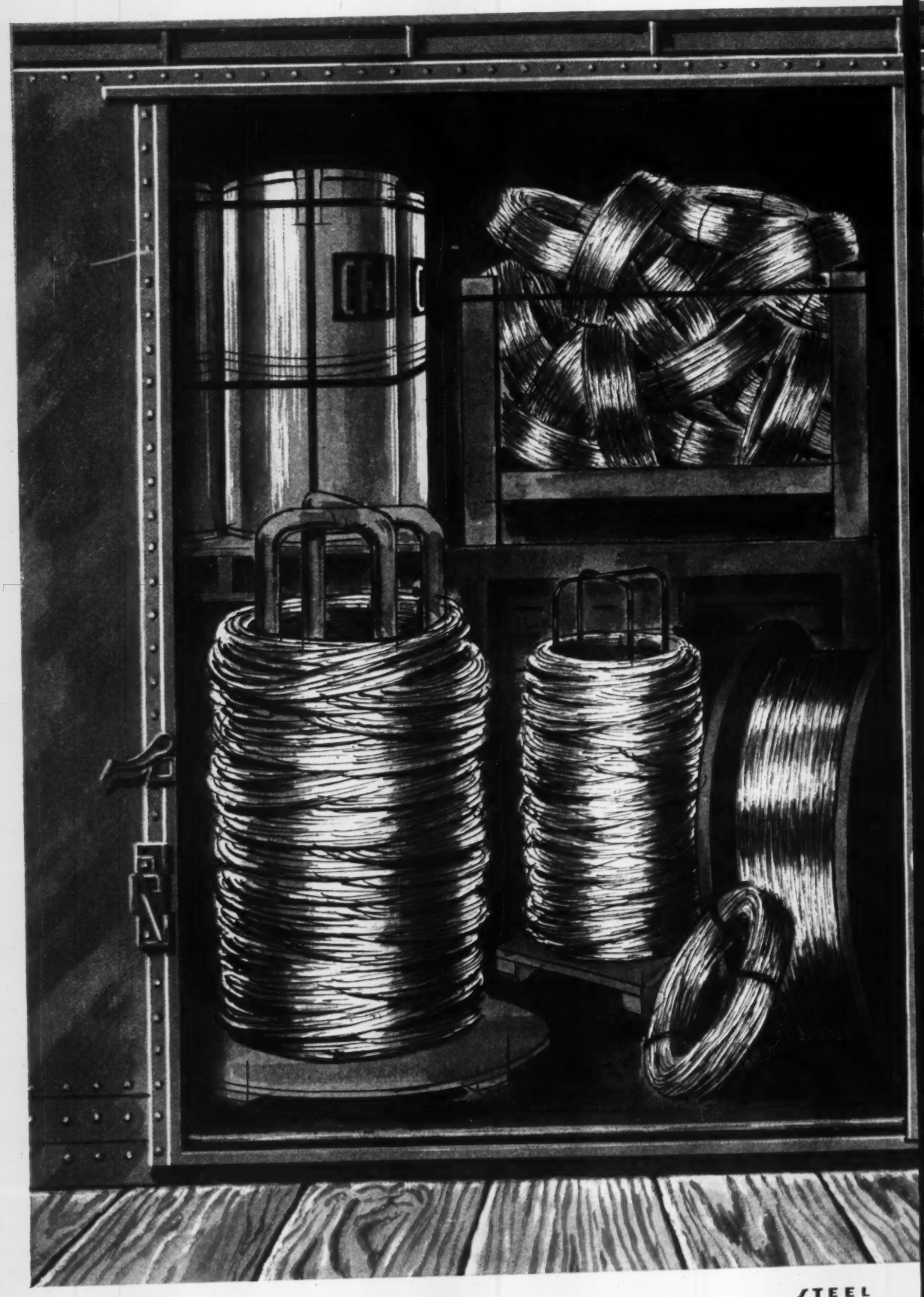
Compressor for 420 cfm

A heavy duty (100 hp), Hydrovane rotary compressor for continuous operation at 100 psi delivers 420 cfm. It is suitable for intermittent use at pressures to 125 psi.



It can be anchored to any floor. Special foundations are not needed. Only a 3-in. outlet is required. Discharge air temperature is 180° F.

Automatic safety switch and time meter are standard equipment. *Write*: Davey Compressor Co., Kent, Ohio. *Phone*: Orchard 3-3471



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NEW literature

Write directly to the company for a copy

Rectification Plants

A catalog describes plants for the production of oxygen and/or nitrogen in liquid or gaseous form. Station pumps with vaporizers and storage and converter tanks for liquid oxygen, hydrogen, and argon are also illustrated and described. Superior Air Products Co., 132 Malvern St., Newark 5, N. J.

Electric Fork Truck

A 4-page folder gives data on Model F-30T4, a 4000 lb capacity, electric powered fork truck. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

Distribution Center

GEA-6619, 16 pages, contains data on a dry integral distribution center for industrial plants and other uses. General Electric Co., Schenectady 5, N. Y.

Gasoline Fork Truck

A 3000-lb capacity fork lift truck is described in a 4-page folder, No. 1371. Baker Industrial Trucks, division of Otis Elevator Co., Cleveland 2, Ohio.

Lubrication Chart

A chart for machine shop personnel showing where and how lubricants should be applied is contained in a bulletin. Alpha-Molykote Corp., Stamford, Conn.

Investment-Cast Properties

Investment-cast properties of eight stainless and four low alloy steels are outlined in a 40-page booklet. The stainless steels are Types 310, 316, 347, 410, 431 low carbon, 431 high carbon, and 440C. Low alloy steels are 4130, 4140, 6150, and Haynes 1000. Haynes Stellite Co., a division of Union Carbide Corp., 30-20 Thomson Ave., Long Island City 1, N. Y.

Contour Milling Machines

Data on contour machining of unsupported honeycomb cells and the tooling and fixture setups required for those operations are given in an 8-page catalog, No. 1167. Specifications, cutter speeds and feeds, and gantry construction of milling machines are also included. Onsrud Machine Works Inc., 7720 N. Lehigh Ave., Niles, Ill.

Press Equipment

This catalog contains features and specifications of reeling, straightening, feeding, and scrap handling equipment. Cooper Weymouth Inc., 600 Honeyspot Rd., Stratford, Conn.

Corrosion Resistance

A data chart, Sec. A., No. 8, shows corrosion resistance of 34 standard grades of stainless steel. Peter A. Frasse & Co. Inc., 17 Grand St., New York 13, N. Y.

Pumps and Motors

Hydraulic pumps and fluid motors are described in Catalog No. 111. Included are construction features, performance curves, data on pump-motor combinations, duplex or tandem models, and geared flow dividers. Dept. PR, Tuthill Pump Co., 939 E. 95th St., Chicago 19, Ill.

Drawing Fine Wire

Drawing to 0.001 in. is discussed in an 8-page bulletin. The use of diamond dies to draw the wire to a bright, uniform finish is described. Nessor Alloy Products Co., 282 Halsey St., Newark 2, N. J.

Welding Wire Handbook

An 84-page booklet, "Aircomatic Welding Wire Pocket Guide," deals with wire types, wire diameters, and packaging data. Information is given on chemical composition, mechanical properties, and operation. Air Reduction Sales Co., a division of Air Reduction Co. Inc., 150 E. 42nd St., New York 17, N. Y.

Cemented Oxides

"The Facts About Cemented Oxides" is a folder including price lists for Grade 0-30 cemented oxide inserts, blanks, and cylinders. Product data, application sheets, and technical information are provided. Metallurgical Products Dept., General Electric Co., Detroit 32, Mich.

Diamond Grip Collets

Types for turret lathes are covered in Bulletin No. 20. Featured are solid collets, master collets, and collet pads. Sutton Tool Co., Sturgis, Mich.

Battery-Powered Fork Truck

A 2000 lb capacity model is described in a 6-page brochure. Included are photographs and drawings of the contractor panel and description of exposure of the hydraulic pump by a hinged, drop-down cover plate. Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.

Semiautomatic Welding

Two products to be used in semiautomatic welding are described in Bulletin NH-138. Detailed are a crane-held cage assembly to carry a control and wire feed unit. National Cylinder Gas Div., Chemetron Corp., 840 N. Michigan Ave., Chicago 11, Ill.

Hydrogen Atmosphere

A combined full muffle hydrogen atmosphere furnace and ammonia dissociator is described in Bulletin D-150. Details include basket sizes, over-all length, lengths of components, heating chamber area, and furnace width. Furnace Div., Eclipse Fuel Engineering Co., Rockford, Ill.

Tubeless DC Power Supply

It's detailed in a data sheet. Features include a ± 0.1 per cent regulation accuracy, 1 per cent maximum ripple, less than 0.1 second response time, and external sensing terminals. Sorensen & Co. Inc., Richards Avenue, South Norwalk, Conn.

Power Presses

A bulletin lists specifications and standard and optional features. Johnson Machine & Press Co., a division of Brontrager Corp., 620 W. Indiana Ave., Elkhart, Ind.

Carbide Slot Dies

Standardization is discussed in an 8-page booklet. Included are advantages and prices. Oberg Mfg. Co. Inc., Silverville Road, Tarentum, Pa.

Comparison of Vises

A table showing comparable model numbers and sizes of vises is included in a 16-page catalog. Also detailed are operations and features in the Machinists' vise line and numbers assigned to the new models. Desmond-Stephan Mfg. Co., Urbana, Ohio.

Side-Loading Unit

A side-loading handling unit is featured in an 8-page bulletin. It is made in capacities of 4000 to 30,000 lb and stacks like a fork truck, carries like a platform truck, and delivers like a road truck. It is powered by electricity, LP-Gas, or diesel fuel. Baker Industrial Trucks, a division of Otis Elevator Co., 1250 W. 80th St., Cleveland 2, Ohio.

Precision Contouring

A cam operated, precision contouring machine is described in a 4-page bulletin. Included are illustrations of the Model 30-008, close-ups of the cam-controlled slides, specifications, and a specification diagram. Olofsson Corp., 2738 Lyons Ave., Lansing, Mich.

Material Handling Equipment

A 90-page catalog covers data on conveyors and special material handling equipment. Conveyor Systems Inc., Morton Grove, Ill.

Steel Belts

Brochure No. SB-70 gives information on applications in handling press scrap, turnings, steel parts, chips, and part feeders. Prab Conveyors Inc., 30121 Groesbeck Highway, Roseville, Mich.

Tube Cutters

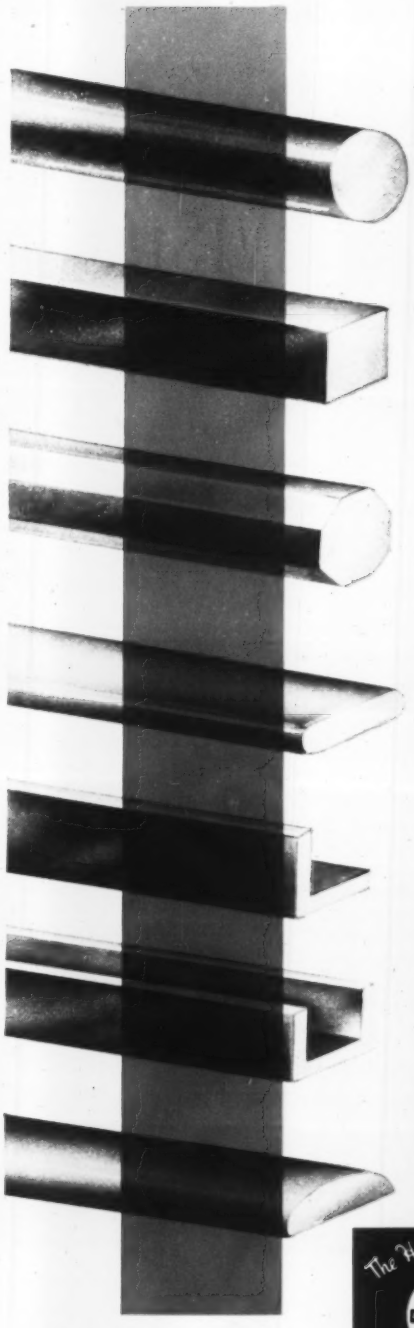
They are described in a pamphlet. Specifications and operating instructions are provided. Steel Products Engineering Co., a division of Kelsey-Hayes Co., Springfield, Ohio.

Boiler Tubing

A data card lists maximum allowable working pressures, by tube sizes, for electric resistance welded boiler tubing. It is based on the latest edition of the ASME Boiler Construction Code and covers tubing for both water tube and fire tube boilers. Sales Office, Babcock & Wilcox Co., Beaver Falls, Pa.

Zinc Applications

"Zinc—A Mine to Market Outline" is a 95-page booklet describing sources, production, properties, and applications. American Zinc Institute Inc., 60 E. 42nd St., New York 17, N. Y.



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Regular grades and finishes are just a part of our extensive bar stocks. As "The House of Stainless," we maintain the most complete inventory—including grades like 440C-FM, and finishes such as ground and polished, as well as special ground-and-polished accuracy stock with a tolerance of plus-or-minus .0005".

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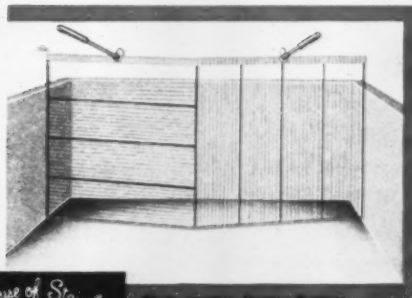

Use of a special half-oval shape in the manufacture of their wire curd knives, gave Damrow engineers exactly what they wanted for their product. With a minimum of weight, they obtained the necessary strength and rigidity. And the type of stainless used, assured lasting sanitation and long service life. Supplying specials like this is routine at "The House of Stainless."

Photo, courtesy Damrow Brothers Company, Fond du Lac, Wisconsin

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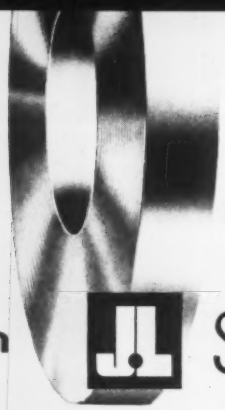

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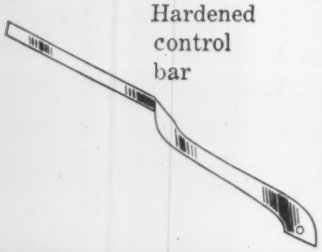
cold rolled spring steel

The quality of your spring steel parts or products is only as good as the spring steel itself—its response, its performance. When you specify J&L it means all the advantages of most exacting quality control—from ore to finished coil. Particularly important is the opportunity to utilize J&L's Restricted Specification processing to achieve the qualities necessary for optimum end-results. With individual restricted specifications met, oftentimes production operations can be simplified and in many instances product quality improved. As an example look at this . . .

TYPICAL APPLICATION . . .

product	specification	results
 Hardened control bar	Spring Steel Analysis—AISI—1050 annealed Size 4½" x .042 Tolerance ± .0003 including crown Width tolerance ± .005 Temper—B78 Max. Finish—#2 Coil size 250/300 lbs. per in. width	Uniformity of shape and gauge made possible change from cut lengths to coils, reducing handling and inspection. Increased speed of production line. Amazing thickness control eliminated 2 quality control stations.

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- Tempered Spring Steel
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- Electrolytic Zinc, Tin, Copper & Brass Coated
- Alloy
- Stainless
- Painted

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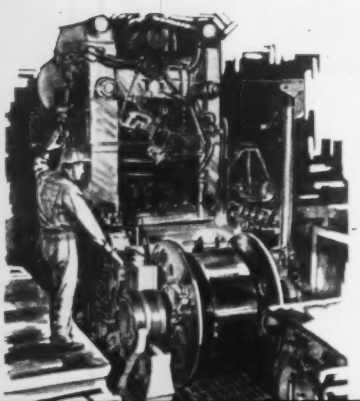

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FORMERLY THE COLD METAL PRODUCTS COMPANY

Alan Wood Initiates Price Rise

TAKING the initiative, Alan Wood Steel Co., Conshohocken, Pa., last week announced it would raise its quotations an average of $6 a ton, effective July 7. Products involved: Plates and floor plates, up $5 a ton; hot-rolled sheets, $6; cold-rolled sheets, $7.

QUALIFIES POSITION— The company did not take an irrevocable position in announcing its price policy. H. R. Wood, president, indicated the firmness of its new prices depends on action by competitors. It intends to remain competitive in case other steelmakers do not take similar price action.

LEADS THE WAY— Regardless of the position eventually taken by U. S. Steel Corp. and other large producers, Alan Wood's move is certain to force the price issue now. Only ten days ago President Clifford Hood of U. S. Steel issued a statement that left doubt about the timing of any increase. Some observers interpreted it as a plea that some other company should take the pricing initiative.

OFF THE HOOK— If that latter point was the corporation's meaning, the hint has been understood. U. S. Steel would certainly agree with the reasoning behind Alan Wood's action. That company's position is the advance it announced is the minimum fair increase which should be made at present—it will compensate the company only for "our own increased labor costs and will not cover any other increased costs."

LABOR COSTS UP— Alan Wood's President Wood pointed out the steel industry contracted for increases in labor costs which will amount to about 25 cents per manhour since its prices were last adjusted. Salaried employees will receive comparable raises. The wage increases are claimed to be far more than any steel company can be expected to absorb through improved productivity.

SHORT DELAY MIGHT HELP— The July 7 effective date picked by Alan Wood would be welcomed by many other steel producers. Reason: It will take them until then to ship all the steel committed under current prices.

PRODUCTION SLIDES— With consumers no longer hedging, demand for steel has eased considerably. Plant vacations and model changeovers in the automotive industry will cause further deterioration of the market in July, so producers are curtailing their output. After eight straight weeks of improvement, steelmaking operations fell 1.5 points last week to 63 per cent of capacity. Production was about 1.7 million tons of steel for ingots and castings. June's output was about 7.3 million tons, highest of any month this year.

INVENTORIES FALLING— Even when production was at a 1958 peak (nearly 65 per cent of capacity), less steel was being turned out than was being chewed up. Market analysts estimate that consumption is equivalent to 70 per cent of steelmaking capacity. Inventory liquidations will probably continue through July, until a "minimum" level of about 12 million tons is reached.

AUTOMAKERS WATCH REUTHER— Steel producers may get no big orders from Detroit until September or October, despite talk of early model introductions. Automakers' inventories are small (Ford reportedly has a 12-day supply), but mill deliveries are fast. Car builders won't jam their pipelines with '59 models until they've worked off the '58 stockpile. They won't feel safe about building steel inventories until they've got a contract with Walter Reuther.

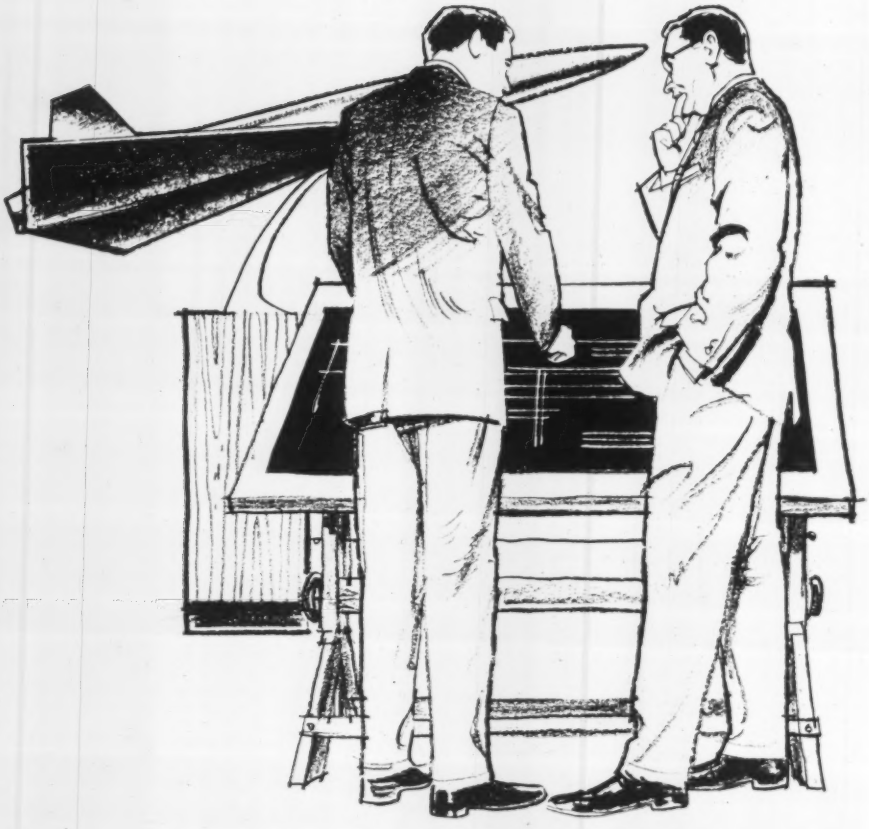
WHERE TO FIND MARKETS & PRICES

	New Prices	
Bars, Merchant	124	131
Reinforcing	147	132
Boiler Tubes	...	134
Clad Steel	...	135
Coke	...	137
Coal Chemicals	...	137
Charts:		
Finished Steel	129	...
Ingot Rate	128	...
Scrap Prices	...	141
Comparisons	...	129
Contracts Placed	128	...
Contracts Pend.	128	...
Electrodes	...	137
Fasteners	...	134
Ferroalloys	...	138
Fluorspar	...	137
Footnotes	...	134
Galvanized Sheets	...	121
Imported Steel	...	137
Ingot Rates	128	...
Metal Powder	...	137
Nonferrous Met.	144	146

	New Prices	
Ores	147	137
Pig Iron	141	136
Piling	...	131
Plates	127	131
Plating Material	...	147
Price Indexes	...	129
Producers' Key	132	...
R.R. Materials	141	134
Refractories	...	137
Scrap	140	142
Slag Demand	148	...
Semifinished	127	131
Sheets	123	132
Silicon Steel	...	133
Stainless Steel	147	135
Strip	123	133
Structurals	127	131
Tin Mill Prod.	...	133
Tool Steel	127	135
Tubular Goods	124	135
Warehouse	127	136
Wire	124	133

Metalworking Outlook—Page 43

Technical Outlook—Page 79



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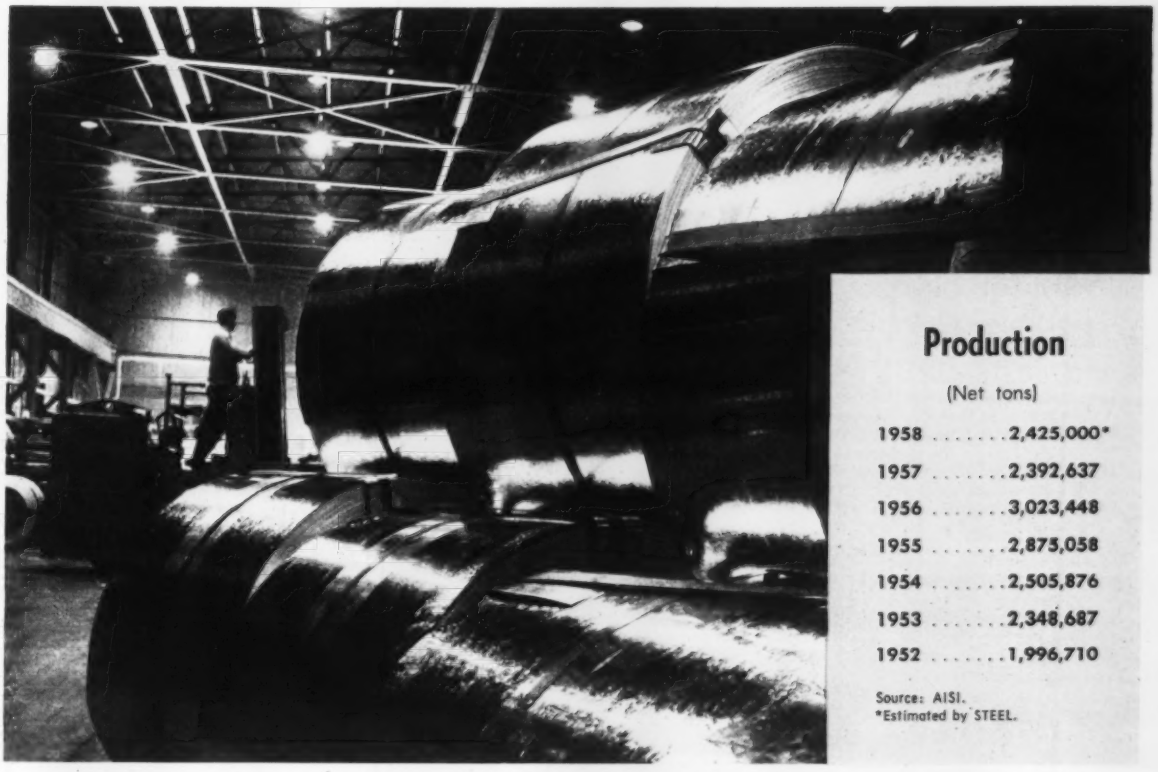


Production

(Net tons)

1958	2,425,000*
1957	2,392,637
1956	3,023,448
1955	2,873,058
1954	2,505,876
1953	2,348,687
1952	1,996,710

Source: AISI.
*Estimated by STEEL.

Galvanized Sheets Recover

Here's one industry that's inching upward despite the general slump. Industry sources predict: Construction and farm work will push production gains higher

ALMOST UNSCATHED by the recession, producers of galvanized sheets are hoping to match or surpass their 1957 output (see table).

Demand for their product has held up much better than demand for steel in general. During the first four months of this year they shipped only 10 per cent less than in the like period of 1957 (756,529 tons, vs. 846,365). Contrast that with the 39 per cent drop in shipments of all steel products.

But for abnormally bad weather earlier in the year, shipments might have been even closer to 1957's. Heavy snows and freezing temperatures delayed construction projects and farm work. April shipments topped those of the same month in 1957, and the pickup since then has been steady.

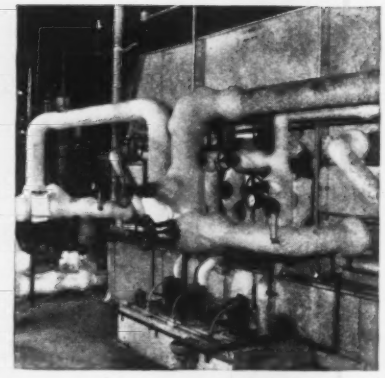
Shift into High—In interviewing major producers last week, STEEL found that most companies are operating close to capacity. Estimates ran from 71 to 100 per cent, with several firms reporting maximum output. One company is so rushed that it temporarily hiked operations from 20 turns a week to 21, allowing no time for repairs.

May and June have been so much better than preceding months that some galvanizers are drawing abreast of their 1957 paces. One of the losers says its shipments are only 3 per cent under last year's. One of the gainers says shipments are up 20 per cent.

Reasons for Pickup—The prospect of a midyear price increase has been a big factor in June sales. Small lot buyers find hedging attractive because their needs are predictable and investments are small. Knowing that price buyers will be out of the market in July, producers expect a drop in sales. But these factors may cushion the fall: 1. Some June buying was for inventory replacement, and the need to replenish stocks will grow as building activity hits full stride. 2. Highway programs will require large tonnages for corrugated culverts, drainage pipes, guard rails, and road signs. 3. Farmers will have to build storage bins to prepare for record grain harvests.

Analysis of first quarter shipments shows that 35.7 per cent of the sheets went into contractors' products (culverts and concrete pipe, air conditioning and ventilating equipment, plumbing and central heating equipment, builders' hardware, and other products); 32.7 per cent went to warehouses and distributors; 5 per cent to construction, including maintenance; 4.9 per

. . . a machine with "A GOOD RECORD as a REVENUE PRODUCER"



A typical case of using a Niagara Aero Heat Exchanger to provide cooling for production equipment shows amortization of this machine in 16 months and $90 per day revenue thereafter.

Industrial engineers with careful cost, upkeep and revenue records on all machines, credit Niagara Aero Heat Exchangers with important gains over other methods.

They use these machines to provide cooling for production equipment, welders, extruders, drawing dies, furnaces, quench baths, plating, chemical and electronic process...all millwater system uses.

They get positive control of critical process temperatures with improved product quality, rejection losses prevented. Heat is removed at the rate of in-put.

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Write for Bulletins 120, 135

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Niagara District Engineers in Principal Cities of U. S. and Canada

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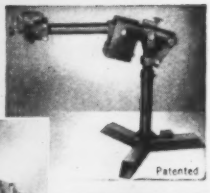

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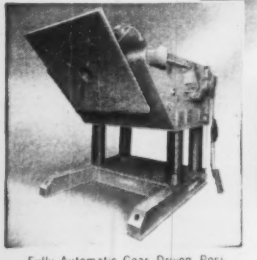

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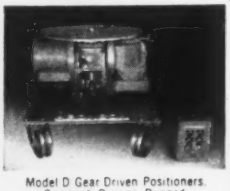

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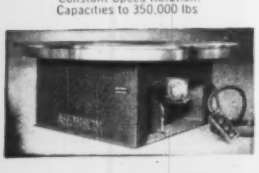
Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.



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Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.

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cent to agricultural machinery and equipment; 4.2 per cent to automotive vehicles and parts; 4.1 per cent to appliances, utensils, and cutlery; 3.4 per cent to exports; and 2 per cent to containers. (The remaining 8 per cent went to small users.) Shipments to all markets except agricultural equipment and containers were lower in the first quarter than in the same period last year.

Inventories Low—Sales have been boosted by reductions in customer inventories which started last year. It's believed that galvanized stocks got the ax earlier than other products and that cuts were deeper. Inventories are now so low that many fabricators buy for immediate use.

Galvanized sheets are less vulnerable to the recession than other steel products because they're used in low-cost construction and the manufacture of household wares (bought in good times and bad). Only 4 per cent of shipments are subject to the vagaries of automotive production. A third of the tonnage moves to warehouses and distributors, whose buying habits are reasonably stable.

New Applications—Product managers are optimistic about new uses. Prefabricated buildings have great potential. Farmers are buying do-it-yourself kits and assembling barns, garages, and tool sheds from light structurals and galvanized sheets. Prefabricated towns are expected to mushroom along freeways which bypass large cities. Other applications include: Automotive mufflers; headlight housings; license plates; inner parts of doors and windows; inner parts of washers, dryers, and air conditioners; mobile homes; shower stalls; insulated wall panels; and roof decking.

Aluminum Loses Out—Steelmakers admit that aluminum has been an important competitor for rural siding and roofing applications. But they say it's losing ground. "Farmers bought it during the war years when they couldn't get enough galvanized," a critic asserts, "but they've found it doesn't meet their needs. Thermal characteristics and lack of rigidity pose problems." Galvanizers expect aluminum coated steel to compete for the automotive muffler market, but they think they hold a trump card in lower selling prices.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 132 & 133

Shipments were better in June than in May despite lagging auto demands. Price hedge buying against an expected increase July 1 (apparently temporarily delayed) was a contributing influence, as was the low state of some consumers' stocks.

One Pittsburgh mill's shipments were up 25 per cent; another's 20 per cent. But market observers caution that percentages can be misleading when shipments are small. Sellers are still quoting two to three week deliveries on hot sheets and four to five on cold.

A drop in orders is expected during July because of June hedging and manufacturing plant shutdowns for mass vacations. Actually, most sellers anticipate little buying pressure until September. At Chicago, though, some mills say July is shaping up better than had been expected. It's figured many consumers have reached the bottom of the stock barrel. Also, some small users appear to have decided to maintain their plants in operation when larger competitors close for vacations.

Orders are still trickling into Detroit mills. Quantities are small, and most are from auto suppliers. Automotive buying will probably be restricted to small lots for finishing '58 models and getting started with the '59s (die tryout and pilot runs). Chrysler is closing two Detroit stamping plants, affecting 2300 employees. Operations are being transferred to other area plants and to a works at Twinsburg, Ohio. The move consolidates operations and utilizes more modern equipment.

Larger orders from appliance manufacturers are expected later this summer. This is because of a pickup in housing starts. Significantly, Delco Div., General Motors Corp., is recalling 200 idle employees at Rochester, N. Y., bringing to 500 the number rehired at that plant since May 1. Employment is now near 3600, only 300 less than when cutbacks started last fall.

General Electric's recent announcement that it has dropped its distributor network is taken to mean that it wants to be able to keep a closer check on finished

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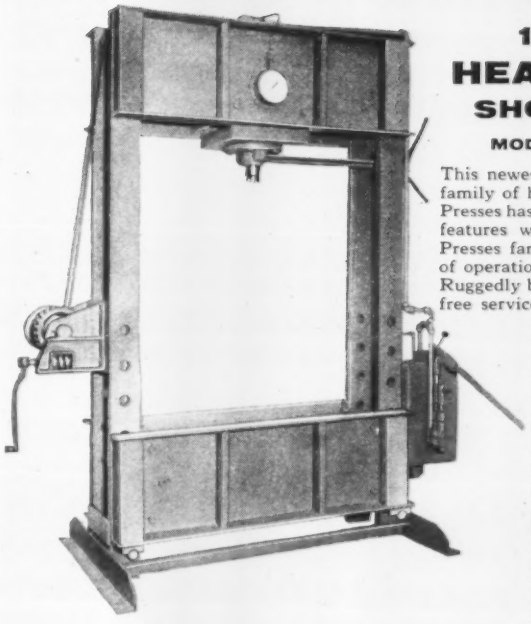

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MODEL 37KAA-150

This newest member of the KRW family of hand-operated Hydraulic Presses has all the "built-in" quality features which have made KRW Presses famous for ease and speed of operation.

Ruggedly built for years of trouble-free service, this press is designed to handle jobs requiring pressures up to 150 tons, yet it is sensitive enough to handle those jobs requiring very light pressures.

Open side construction combined with the extra large daylight opening give this press unparalleled versatility. Permits the straightening of extra long bars or shafts and makes it ideal for straightening axles, connecting rods and similar applications.

ADDITIONAL FEATURES WHICH MAKE THIS AN OUTSTANDING NEW PRESS ARE:

✳ Capstan Hand Wheel that speeds the ram to the work in a matter of seconds and can be operated mechanically to 3 tons.

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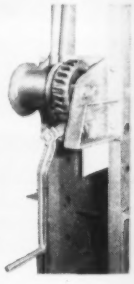
✳ Detachable Pump Handle on the Pumping Unit which is positioned at a convenient operational height to prevent operator fatigue.



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NEW 2-SPEED HAND-OPERATED PUMP ▶

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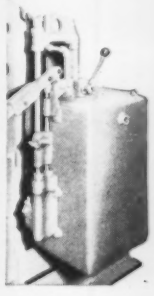

Specifications

MODEL 37KAA-150

Hand operated. Capacity to 150 tons. Opening between uprights left to right 48". Maximum daylight 45". Minimum daylight 8".

Accessories included

1 pair matched V-blocks. Dual calibrated pressure gauge. Flat Ram nose.

Whatever your press problems there is a K. R. Wilson Press that can help you do a better job faster, more economically. Write for complete information today.

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goods inventories, so it can more closely control materials buying.

Operations at galvanized sheet lines are expected to hold close to capacity through July. Close behind, but not quite fully occupied, will be the tin mills.

Steel Bars . . .

Bar Prices, Page 131

There was a fair volume hedge buying of carbon and alloy bars in June, some producers' sales being up 5 to 10 per cent above May's. Some bookings extend into July, and there is a bare possibility that total July volume will be a lot larger than had been thought likely.

Market observers think another wave of hedge buying could start if prices are not raised soon after the opening of the new month. A delay would permit consumers time to take delivery on unshipped June tonnage at the old price, and possibly time to place additional orders and get deliveries before a new price deadline is set.

Warehouse purchases of alloy and carbon specialty bars were good in June, volume being possibly a shade better than in May. Power lawn mower manufacturers have apparently used up their bar stocks. They're back in the market and will probably buy as much tonnage this year as last. A record year is forecast for sales of bars to agricultural equipment manufacturers. They're expected to top those of any previous year by 5 per cent.

Wire . . .

Wire Prices, Pages 133 & 134

Vacation shutdowns will sharply curtail wire production in July. The bulk of tonnage ordered in recent weeks in anticipation of a July 1 price increase will be shipped, and mill backlogs are small.

Auto demand is expected to spark the next buying wave, starting in August for September delivery. Few consumers canceled orders unshipped by June 30. With the possibility that higher prices may be delayed beyond July 1, additional hedge buying may develop.

Prior to U. S. Steel's statement hinting that a price advance might be delayed beyond July 1, Dickson Weatherproof Nail Co. (it has plants at Evanston, Ill., Galveston, Tex., and Birmingham) announced it would not increase its prices in July.

American Steel & Wire Div., U. S. Steel Corp., closes its Waukegan, and Joliet, Ill., plants for vacations July 6 to July 20.

Tubular Goods . . .

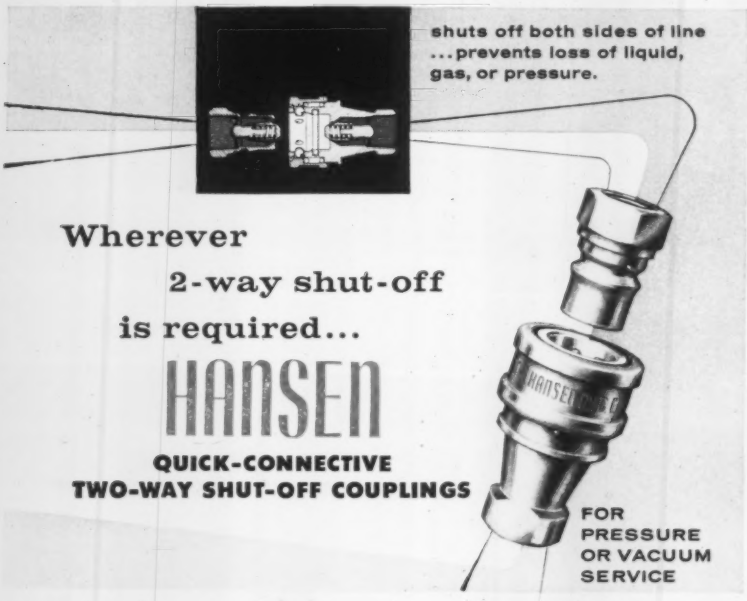
Tubular Goods Prices, Page 135

Surprised by the volume of late June buying, producers of oil country goods closed their books before the end of the month. They could not accommodate many customers seeking tonnage shipments by June 30.

July bookings will be off noticeably. One Pittsburgh mill says its orders for early July delivery are about 50 per cent below the June level. Still July may be a fair month—some mills will be busy replacing stocks.

Oil producers' inventories are high, but they're running short of some popular sizes.

There are indications the Texas oil industry may be heading toward better days. The Texas Railroad



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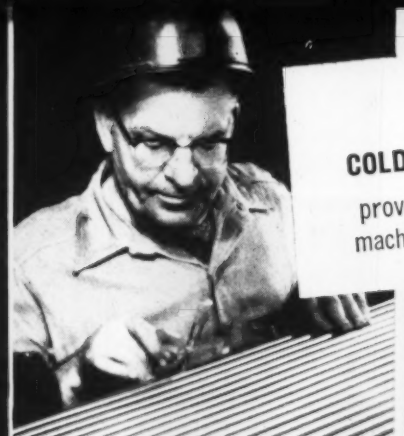

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COLD FINISHED BARS
provide superior finish,
machinability, uniformity

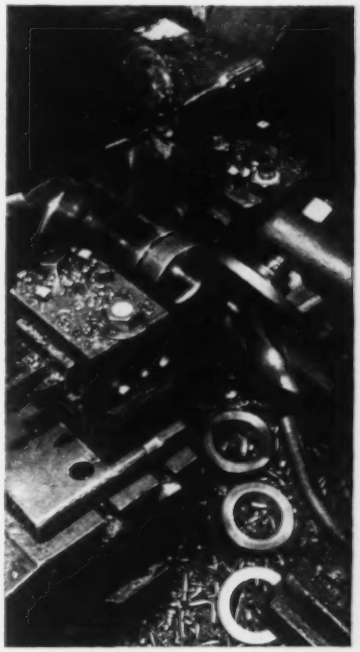
"ten tough production steps prove superiority of J&L cold finished bars"

These 3½" round nuts for the hydraulic mechanism of a heavy duty tractor are machined by the Industrial Nut Corporation, Sandusky, Ohio, from J&L cold finished 1045 leaded steel bars.

Nut blanks are cut from the bar, countersunk, chamfered, heat-treated, slotted on two sides, reamed, tapped, drilled with five holes, grooved on the outside edge and faced. "J&L 1045 leaded steel bars meet our exacting quality specifications for these operations," states Mr. Del Allen, foreman with Industrial Nut.

Machining perfection like this is possible in your operations with J&L cold finished steel bars, quality-controlled from ore to finished steel. A J&L steel specialist can recommend exactly the right steel for any job from J&L's complete cold finished line. He can help you get higher cutting speeds, longer tool life, improved finishes.

Try J&L superior quality bars on your next job. Call your local distributor for fast, complete service or write to Jones & Laughlin Steel Corporation, Dept. 404, 3 Gateway Center, Pittsburgh 30, Pennsylvania.



On a single-spindle screw machine, a 3½-inch round nut blank is cut from J&L cold finished 1045 leaded steel bars, countersunk and chamfered. The complete 10-step production is a real test of steel quality.

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Commission has set a nine-day oil producing schedule for July, allowing the highest flow in 15 months. The July daily allowable will be 2,604,789 barrels, up 121,745 daily over the recent rate. New well completions will add another 33,000.

A. O. Smith Corp. called back 150 employees on the second turn at its Milwaukee pipe plant.

Warehouse . . .

Warehouse Prices, Page 136

Warehouse business is extremely spotty. In some districts, June was the slowest month in years; in others, sales were the best for any month this year.

A substantial volume of business was placed in the Mid-Atlantic district by metalworking shops for maintenance and equipment repair work while their plants are closed for vacations.

In the Houston territory, warehouse customers are working longer hours. Some shops are putting on second shifts. They require larger working stocks and have increased their orders proportionately.

The flood of imports has softened the price tone in the southwest, but major distributors are preparing to revise their price schedules in line with any advance that may be made by mills. Imported material ranges from $20 to $30 a ton under domestic prices.

Semifinished Steel . . .

Semifinished Prices, Page 131

The national ingot rate began to slide last week after eight weeks of steady rise. The average was 63 per cent of capacity, off 1.5 points from the preceding week. The decline reflects slackening demand attending the forthcoming holiday and vacation closings.

Because of poor order books July operations probably will not average as high as those in June. There is enough semifinished steel on hand to take care of most July finished steel business now in sight, it is believed.

The American Iron & Steel Institute is again issuing a percentage of operations figure with its weekly estimate of production. At the beginning of this year, the institute dropped the weekly percentage figure, feeling that it and similar rates for preceding years were not comparable because of yearly changes in steelmaking capacities.

Growing demand for the percentage figure, though, has convinced the institute it should resume issuance. It emphasizes that the current weekly percentage is comparable only with operating rates during previous weeks of this year. It will not make percentage comparisons with former years since they "are not a reliable measure of economic activity."

Plates . . .

Plate Prices, Page 131

"Our June bookings were about 10 per cent above the May level," a Pittsburgh fabricator says. Most of its new work involves mechanical erection and rolling mills. Paper mill orders are declining because of overexpansion in that industry.

The prospect of higher steel prices prompted one fabricator to buy 100 tons of plates for a job that won't be started until 1959. Another company refrained from hedging because it had nothing in view that couldn't be made of steel in inventory.

"Our requirements are hard to anticipate," a buyer explained. "Too often we get stuck with plates that are too thick or too narrow for the job we want to do."

Fabricators are bidding more jobs than ever because of severe price competition.

While there is an improvement of tank and miscellaneous construction in the East, plate producers still need tonnage. They have open capacity for July and can offer deliveries within three weeks. Some plant closedowns for vacations are scheduled.

Phoenix Iron & Steel Co., subsidiary of Barium Steel Corp., new York, has booked orders from the Navy for several thousand tons of plates. Some of the company's facilities that had been idle were reactivated June 10 to process June shipment orders. Other facilities will resume operation during July.

Tool Steel . . .

Tool Steel Prices, Page 135

A Pittsburgh producer of alloy and specialty steels, noting an "encouraging trend in inquiries and orders," is increasing production to establish the largest inventory of high speed steel in its history.

June shipments of another producer were the best this year. One maker attributes a substantial pickup in June orders to: 1. Buyers hedged to beat a possible price increase. 2. Buyers didn't want July vacations to interfere with shipments.

There are indications that automotive tooling hasn't been completed. Returning from a sales trip to the Midwest, a Pittsburgh tool steel executive commented: "There are still a lot of prints around. Tooling isn't finished, especially in diecasting — which indicates that changes are being made in trim."

Detroit area sellers report orders have improved, and the outlook is promising as auto companies stock up on cutting bits for the 1959 model runs. The completion of 1959 model tooling, though, means that diemakers are in a slump until the 1960 program breaks in late August or September. It means there will be little buying of die steels until fall in the Detroit market.

Structural Shapes . . .

Structural Shape Prices, Page 131

Structural steel fabricators are buying on a fill-in basis. A few took in extra tonnage in June, anticipating higher prices July 1, but most shops bought only what they needed for immediate use.

If prices go up, fabricators will try to pass the increases along. It won't be easy, because competition is keener than ever. For example, one relatively simple job at Pittsburgh was bid recently at 8.5 cents a pound, or less than the warehouse price for the material.

"Our business has picked up 20 to 30 per cent from the May level," a fabricator at that point said, "but it's not as good as it should be at this time. If we could use structurals on hand for all of the work we've booked, our inventory would last about two months."

In New England, the heavier tonnage placed recently was for contracts, and fabricating shops are not holding up shipments. Relatively little volume was ordered in the area as a price hedge. In most cases, the mills declined to guarantee shipment before the July 1 dead-

line. Any delay in effecting higher prices will permit considerable tonnage to be worked off mill books at the prices recently prevailing. Some observers think the mills would rather continue the old price than see tonnage on their books canceled.

More bridgework is being figured, and prices for fabricated and erected tonnage do not reflect higher costs. Structural shop margins are lower than they were last year, and a small minority of fabricators are practically out of the market at current quotations.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

60,400 tons, two contracts for New York State Power Authority, both going to Bethlehem Steel Co., Bethlehem, Pa.; one contract, N6, section 2, involved 35,700 tons, and the other, N7, section 2, involved 24,700 tons; work is in connection with the St. Lawrence Seaway.

2000 tons, Noxon Rapids, Mont., power project, to Union Iron Works, Spokane, Wash., for Washington Water Power Co., Spokane.

2000 tons, tower addition to Delaware Trust Co., Wilmington, Del., through Wark & Co., Philadelphia, general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

700 tons, city incinerator, Philadelphia, through M. & L. Construction Co., general contractor, to Frank M. Weaver Co., Lansdale, Pa.

450 tons, structurals and reinforcing, state highway bridges, Belleville-Nutley, N. J., to Irvington Steel Co., Irvington, N. J. (structurals), and Capitol Steel Co., New York (reinforcing); George M. Brewster & Son Inc., general contractor.

430 tons, foundry building, Dodge Steel Co., Philadelphia, to Robinson Steel Co., Philadelphia.

250 tons, foundry addition, Universal-Rundle Co., Camden, N. J., through Hughes-Foulkrod, Philadelphia, general contractor, to Robinson Steel Co., Philadelphia.

175 tons, grinding mill and equipment for Cuban copper project, to Union Iron Works, Spokane, Wash.

100 tons, Hanford Works installation, to Bethlehem Pacific Coast Steel Corp., Seattle.

Unstated, Lehigh County bridge, Allentown, Pa.; prestressed steel construction to Reed & Kuhn, Elysburg, Pa.; originally a structural steel alternate had been asked involving 1100 tons.

STRUCTURAL STEEL PENDING

13,000 tons, Bronx approach, Throggs Neck Bridge, Triborough Bridge & Tunnel Authority, New York; Harris Structural Steel Co., low bidder.

10,400 tons, Queens approach superstructure, Throggs Neck Bridge, Triborough Bridge & Tunnel Authority, New York; Bethlehem Steel Co., Bethlehem, Pa., low bidder.

10,000 tons, 26 radio towers, Cutler, Maine; bids to the First Naval District, Boston.

6000 tons, state highway bridges, including 11-span viaduct, Worcester Expressway, Worcester, Mass., bids June 24, Boston.

3000 tons, Bonneville transmission towers, Maxwell Steel Co., Dallas, reported to be low bidder.

3000 tons, transmission towers, bids in to Bonneville Power Administration, Portland, Oreg.

1000 tons, state highway bridges, Huntington Expressway, Providence-Cranston, R. I.; M. A. Gammino Construction Co., Providence, low on general contract.

825 tons, Flaming Gorge power project, Utah; Arch Dam Constructors, low at $29,602,497, to the U. S. Bureau of Reclamation.

634 tons, state bridge work, Washington-Lafayette Counties, Pennsylvania; bids July 11.

515 tons, state highway bridges, Wilmington-Tewksbury-Andover, Mass.; Bayer & Mingolla Construction Co., Worcester, Mass., low on general contract.

462 tons, state bridge work, Carbon County, Pennsylvania; bids July 11.

450 tons, state highway bridges, Holyoke-South Hadley, Mass.; bids June 24, Boston.

390 tons, 567-ft freeway connection, Oregon highway, Multnomah County; Kuckenberg Construction Co., Portland, Oreg., low at $308,899.

375 tons, two grade separation structures, Enfield, Conn.; Enfield Road Construction Co. Inc., low on general contract.

325 tons, state bridge, Farn Hurst, Newcastle County, Delaware; bids July 2.

300 tons, powerplant reactor testing station, Arco, Idaho; Titan Steel Corp., Salt Lake City, Utah, apparently low bidder at $99,430.

220 tons, Washington State highway bridge, Whatcom County; also 140 tons of reinforcing steel; bids to Olympia, Wash., July 8.

200 tons, municipal seafood distribution center, Philadelphia; bids July 9; Ballinger Co., Philadelphia, architect.

150 tons, hangar and aprons, Ft. Lewis, Wash., Early Construction Co., Tacoma, Wash., low at $465,325 to U. S. Engineer.

150 tons, hangar, Ft. Lewis, Wash.; bids in to the U. S. Engineer, Seattle.

125 tons, including reinforcing bars, two-span composite WF beam bridge, Mendon, Vt.

111 tons, state bridge, Bergen County, New Jersey, bids July 8.

100 tons, housing construction at Alaska military posts; bids in to the U. S. Engineer, June 17.

REINFORCING BARS . . .

REINFORCING BARS PLACED

700 tons, additional buildings, City Hospital, Worcester, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Park Construction Co., Boston, general contractor.

440 tons, miscellaneous highway and construction, near Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle.

285 tons, Washington State College veterinary clinic, Pullman, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; Henry George & Sons, Spokane, Wash., general contractor.

REINFORCING BARS PENDING

1100 tons, state highway structures, including ten composite WF beam bridges, Brattleboro, Vt., bypass project; bids July 11, Montpelier, Vt.

300 tons, state highway bridges and pavement, Waterbury Expressway, Waterbury, Conn.; bids July 7, Hartford, Conn.; also 170 tons, steel piles, and 135 tons highway mesh.

300 tons, two grade separation structures, Bloomfield-Simsbury, Conn.; bids July 7, Hartford, Conn.; also 100 tons of highway mesh.

225 tons, three-span welded girder bridge, Naugatuck River, Derby, Conn.; bids July 7, Hartford, Conn.; also 225 tons of steel piles.

175 tons, four-span welded plate girder bridge, Farmington River, Bloomfield-East Granby, Conn.; bids July 7, Hartford, Conn.

120 tons, seven bridges, Douglas and Wallowa Counties, Oregon; bids to Bureau of Public Roads, Portland, Oreg., June 23 to 27.

PLATES . . .

PLATES PLACED

400 tons, storage tank, Larsen Air Field, Washington State, to Union Iron Works, Spokane, Wash.

170 tons, standpipe, Easton Suburban Water Authority, Easton, Pa., to Graver Tank & Mfg. Co. Inc., Catasaugua, Pa.

100 tons, tank, Gulf Oil Co., to unnamed fabricator.

PIPE . . .

CAST IRON PIPE PENDING

250 tons, 12 and 8 in.; bids in to Bellingham, Wash., June 16.

200 tons or more, 16 and 12 in. supply pipe; also 740 ft of steel pipe; bids to Alderwood Manor, Wash., June 23.

STEEL PIPE PLACED

915 tons, 60-in. steel water pipe, City of Philadelphia, through Armour Excavating Inc., to Bethlehem Steel Co., Bethlehem, Pa.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

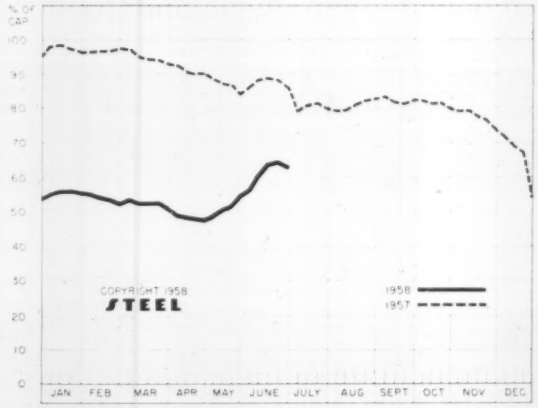
	Week Ended June 29	Change	Same Week 1957	Same Week 1956
Pittsburgh	60	0*	91	92.5
Chicago	66.5	— 4.5*	84.5	82
Mid-Atlantic	62	0	93.5	75
Youngstown	49	— 4	80	100
Wheeling	70	0	82.5	93
Cleveland	50	+ 1*	89.5	88.5
Buffalo	44	— 9.5	102.5	105
Birmingham	68	+ 2	92.5	23.5
New England	39	0	52	86
Cincinnati	63.5	— 0.5	79.5	90
St. Louis	85.5	— 0.5	79	94.5
Detroit	68	— 1*	114	105
Western	74	+ 2*	100	105
National Rate	63	— 1.5	86	85

INGOT PRODUCTION‡

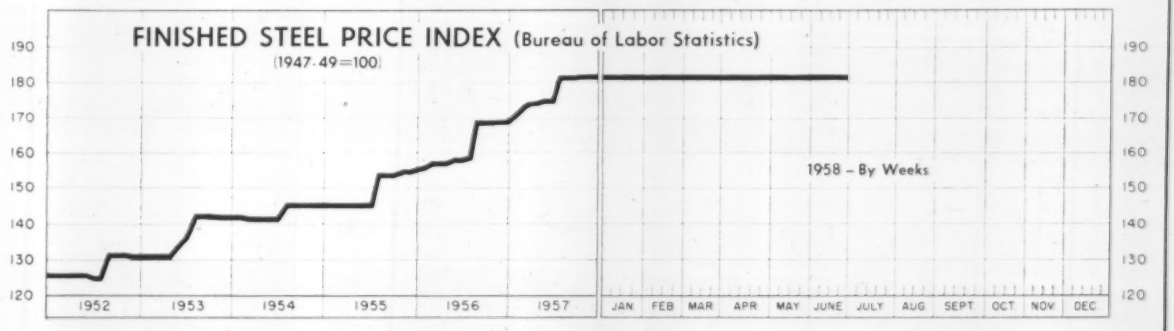
	Week Ended June 29	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	104.9†	109.0	97.5	133.8
NET TONS (In thousands)	1,685†	1,751	1,567	2,150

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



June 24, 1958	Week Ago	Month Ago	June Avg	Year Ago
181.5	181.5	181.6	181.5	174.3

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended June 24

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600	Bars, Reinforcing	6.135
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.360
Tie Plates	6.600	Bars, C.F., Alloy	13.875
Axles, Railway	9.825	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.175
Plates, Carbon	6.150	Sheets, C.R., Carbon	7.075
Structural Shapes	5.942	Sheets, Galvanized	8.270
Bars, Tool Steel, Carbon (lb)	0.535	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650	Sheets, Electrical	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355	Strip, C.R., Carbon	9.214
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.525	Strip, H.R., Carbon	6.075
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	19.814
Bars, H.R., Carbon	6.425	Pipe, Galv., Buttweld (100 ft)	23.264
		Pipe, Line (100 ft)	199.023
		Casing, Oil Well, Carbon (100 ft)	194.499
		Casing, Oil Well, Alloy (100 ft)	304.610
		Tubes, Boiler (100 ft)	49.130
		Tubing, Mechanical, Carbon (100 ft)	24.953
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
		Black Plate, Canmaking Quality (95 lb base box)	7.583
		Wire, Drawn, Carbon	10.225
		Wire, Drawn, Stainless, 430 (lb)	0.653
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	June 25 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	228.59	187.73
Index in cents per lb	6.479	6.479	6.479	6.193	5.086

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$145.42	$145.42	$145.42	$140.24	$111.44
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	64.70	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	64.23	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	65.77	55.77
Steelmaking Scrap, GT	35.00	35.00	34.50	55.83	40.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	June 25 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	4.15
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	4.15
Bars, H.R., deld. Philadelphia	5.725	5.725	5.725	5.365	5.302
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	5.20
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	4.10
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	4.10
Shapes, deld. Philadelphia	5.545	5.545	5.545	5.31	4.38
Plates, Pittsburgh	5.10	5.10	5.10	4.85	4.10
Plates, Chicago	5.10	5.10	5.10	4.85	4.10
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	4.10
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.55
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.925
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.925
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.775
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.775
Sheets, C.R., Detroit	6.05	6.05	6.05-6.15	5.75-5.85	4.975
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.275
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.975-4.225
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.925
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.45-5.70
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.70
Strip, C.R., Detroit	7.15	7.15	7.25	6.95	5.45-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.49	6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$75.50
Wire rods, $\frac{7}{32}$-$\frac{3}{8}$" Pitts.	6.15	6.15	6.15	5.80	4.525

PIG IRON, Gross Ton

	June 25 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$65.50	$55.50
Basic, Valley	66.00	66.00	66.00	64.50	54.50
Basic, deld., Phila.	70.41	70.41	70.41	68.38	59.25
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	68.88	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	65.00	55.00
Malleable, Chicago	66.50	66.50	66.50	65.00	55.00
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

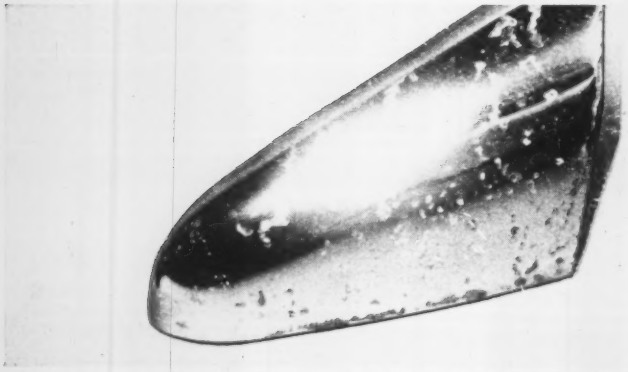
†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

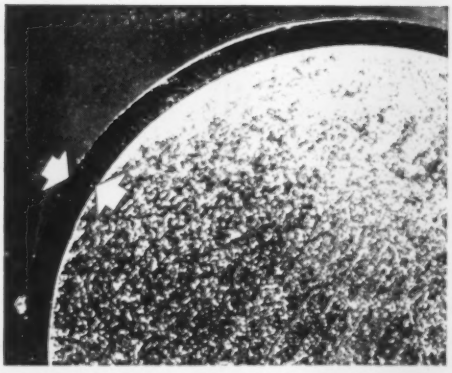
No. 1 Heavy Melt, Pittsburg	$35.50	$35.50	$34.50	$57.50	$42.50
No. 1 Heavy Melt, E. Pa.	34.00	34.00	34.50	56.50	41.50
No. 1 Heavy Melt, Chicago	35.50	35.50	34.50	53.50	37.50
No. 1 Heavy Melt, Valley	36.50	36.50	36.50	54.50	45.50
No. 1 Heavy Melt, Cleve.	33.00	33.00	33.00	51.50	43.50
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	46.50	40.75
Rails, Rerolling, Chicago	52.50	52.50	53.50	74.50	49.00
No. 1 Cast, Chicago	39.50	41.50	41.50	47.50	39.00

COKE, Net Ton

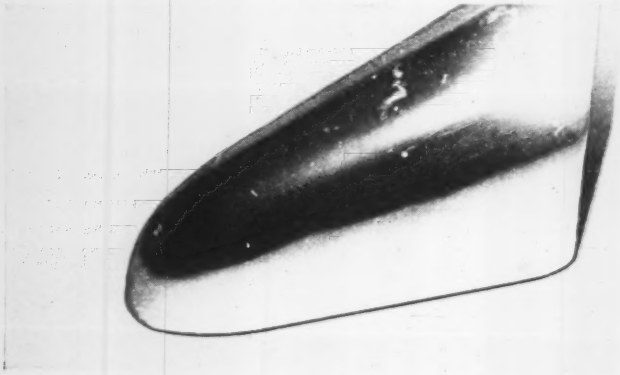
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.00	17.00

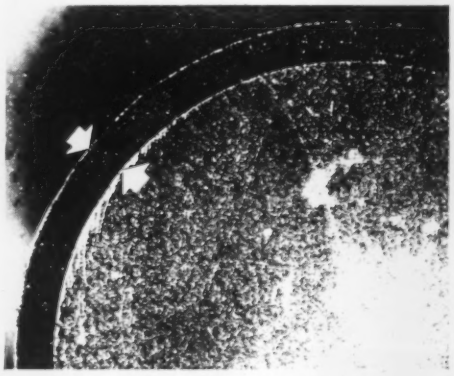


UNICHROME BRIGHT CRACK-FREE CHROMIUM MADE THIS DIFFERENCE IN PROTECTION. Photographs show results of 72 hour acetic acid salt spray test. Part at top was plated with ordinary chromium according to automotive manufacturer's specifications for copper, nickel, chromium finishing. Part at bottom had same copper and nickel deposits but Unichrome Crack-Free Chromium replaced the ordinary chromium, thus greatly increasing corrosion resistance.



UNICHROME SRHS CHROMIUM MADE THIS DIFFERENCE IN THICKNESS. Enlarged cross sections of identical steel rods show ratio of thickness of plate from ordinary chromium solution (top) to thickness from SRHS Chromium Solution (bottom) . . . a much thicker deposit in the same plating time!





How to get more corrosion resistance from chromium plate

When consumers find fault with decorative chromium plate, it's generally due to early corrosion.

This trouble starts with pores and cracks that occur in all ordinary chromium in the range of thicknesses generally used for decorative plating. Road chemicals, salt atmosphere and fumes find a path right down to base metal. Corrosion starts. As corrosion increases, finish failure progresses, allowing still more corrosion.

But you can stop this at the source.

THICKER, CRACK-FREE CHROMIUM

Chromium itself is passive. It doesn't corrode. Eliminate pores and overcome its cracking and you greatly improve its corrosion *protection*. Pores are eliminated by thicker plating. To overcome cracking, use the Unichrome Bright *Crack-Free* Chromium Process. This deposit is free from corrosion-admitting cracks. It has already been used in automotive production for a year.

MINIMIZE YOUR PRODUCTION PROBLEMS

Unichrome *Crack-Free* Chromium is far superior to ordinary chromium not only in protection, but also in operating advantages. The solution is self-regulating. It offers improved throwing power, also better coverage – even over passive nickel.

TO PLATE THICKER CHROMIUM

For those who desire thicker deposits but do not require freedom from cracking, other Unichrome self-regulating processes offer distinct advantages. They plate up to 80% faster than ordinary chromium plating processes. They cover parts with less dulling or burning, are less susceptible to clouding due to current interruption. Control is simplified by their self-regulating features.

Whichever process is best for your operations, Metal & Thermit has over 30 years of service experience to help you make it work. Call in an M&T plating engineer to survey your requirements, tell you what's needed for the results you want. Or, send for Bulletins.

METAL & THERMIT 1908 1958 50TH YEAR

METAL & THERMIT
CORPORATION

GENERAL OFFICES: RAHWAY, NEW JERSEY
Pittsburgh • Atlanta • Detroit • E. Chicago • Los Angeles
In Canada: Metal & Thermit – United Chromium of Canada, Limited, Rexdale, Ont.

Steel Prices

Mill prices as reported to STEEL, June 25, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicate producing company. Key to producers, page 132; to footnotes, page 134.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$73.50

INGOTS, Alloy (NT)
Detroit S41 .....$77.00
Farrell,Pa. S3 .....77.00
Lowellville, O. S3 .....77.00
Midland,Pa. C18 .....77.00
Munhall,Pa. U5 .....77.00
Sharon,Pa. S3 .....77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$77.50
Buffalo R2 .....77.50
Clairton,Pa. U5 .....77.50
Ensley,Ala. T2 .....77.50
Fairfield,Ala. T2 .....77.50
Fontana,Calif. K1 ....88.00
Gary, Ind. U5 .....77.50
Johnstown,Pa. B3 .....77.50
Lackawanna,N.Y. B2 ..77.50
Munhall, Pa. U5 .....77.50
Owensboro,Ky. G8 .....77.50
S.Chicago,Ill. R2, U5..77.50
S. Duquesne,Pa. U5 ..77.50
Sterling,Ill. N15 .....77.50
Youngstown R2 .....77.50

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$96.00
Buffalo R2 .....96.00
Canton,O. R2 .....98.50
Clairton,Pa. U5 .....96.00
Conshohocken,Pa. A3..101.00
Ensley,Ala. T2 .....96.00
Fairfield,Ala. T2 .....96.00
Fontana,Calif. K1 ....105.50
Gary,Ind. U5 .....96.00
Geneva, Utah C11 .....96.00
Houston S5 .....101.00
Johnstown,Pa. B2 .....96.00
Lackawanna,N.Y. B2 ..96.00
Los Angeles B3 .....105.50
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
Owensboro,Ky. G8 .....96.00
Seattle B3 .....109.50
Sharon,Pa. S3 .....96.00
S.Chicago R2, U5, W14..96.00
S.Duquesne,Pa. U5 ....96.00
S.SanFrancisco B3 ...105.50
Warren,O. C17 .....96.00

Alloy, forging (NT)
Bethlehem,Pa. B2 ....$114.00
Bridgeport,Conn. C32..114.00
Buffalo R2 .....114.00
Canton,O. R2, T7 ....114.00
Conshohocken,Pa. A3..121.00
Detroit S41 .....114.00
Economy,Pa. B14 .....114.00
Farrell,Pa. S3 .....114.00
Fontana,Calif. K1 ....135.00
Gary,Ind. U5 .....114.00
Houston S5 .....119.00
Ind.Harbor,Ind. Y1 ..114.00
Johnstown,Pa. B2 ....114.00
Lackawanna,N.Y. B2..114.00
Los Angeles B3 .....134.00
Lowellville,O. S3 ....114.00
Massillon,O. R2 .....114.00
Midland,Pa. C18 .....114.00
Munhall,Pa. U5 .....114.00
Owensboro,Ky. G8 ....114.00
Sharon,Pa. S3 .....114.00
S.Chicago R2,U5,W14 ..114.00
S.Duquesne,Pa. U5 ....114.00
Struthers,O. Y1 .....114.00
Warren,O. C17 .....114.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$117.50
Canton,O. R2 .....120.00
Cleveland R2 .....117.50
Gary,Ind U5 .....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 ...117.50
Warren,O. C17 .....117.50

SKELP
Aliquippa,Pa. J5 ....5.075
Munhall,Pa. U5 .....4.875
Pittsburgh J5 .....5.075
Warren,O. R2 .....4.875
Youngstown R2, U5 ..4.875

WIRE RODS
AlabamaCity,Ala. R2 ...6.15
Aliquippa,Pa. J5 .....6.15
Alton,Ill. L1 .....6.35
Buffalo W12 .....6.15
Cleveland A7 .....6.15
Donora,Pa. A7 .....6.15
Fairfield,Ala. T2 .....6.15
Houston S5 .....6.40
IndianaHarbor,Ind. Y1 ..6.15
Johnstown,Pa. B2 .....6.15
Joliet,Ill. A7 .....6.15
KansasCity,Mo. S5 ....6.40
Kokomo,Ind. C16 .....6.25
LosAngeles B3 .....6.95
Minnequa,Colo. C10 ....6.40
Monessen,Pa. P7 .....6.15
N.Tonawanda,N.Y. B11 ..6.15
Pittsburg,Calif. C11 ....6.95
Portsmouth,O. P12 ....6.15
Roebling,N.J. R5 .....6.25
S.Chicago,Ill. R2 .....6.15
SparrowsPoint,Md. B2 ..6.25
Sterling,Ill. (1) N15 ....6.15
Sterling,Ill. N15 .....6.25
Struthers,O. Y1 .....6.15
Worcester,Mass. A7 ....6.45

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.275
Atlanta A11 .....5.475
Aliquippa,Pa. J5 .....5.275
Bessemer,Ala. T2 .....5.275
Bethlehem,Pa. B2 .....5.325
Birmingham C15 .....5.275
Clairton,Pa. U5 .....5.275
Fairfield,Ala. T2 .....5.275
Fontana,Calif. K1 ....6.075
Gary,Ind. U5 .....5.275
Geneva,Utah C11 .....5.275
Houston S5 .....5.375
Ind.Harbor,Ind. I-2 .....5.275
Johnstown,Pa. B2 .....5.325
Joliet,Ill. P22 .....5.275
KansasCity,Mo. S5 .....5.375
Lackawanna,N.Y. B2 ..5.325
LosAngeles B3 .....5.975
Minnequa,Colo. C10 ....5.575
Munhall,Pa. U5 .....5.275
Niles,Calif. P1 .....5.925
Phoenixville,Pa. P4 ....5.325
Portland,Oreg. O4 ....6.025
Seattle B3 .....6.025
S.Chicago,Ill. U5, W14 5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 .....5.275
Torrance,Calif. C11 ....5.975
Weirton,W.Va. W6 ....5.275

Wide Flange
Bethlehem,Pa. B2 ....5.325
Clairton,Pa. U5 .....5.275
Fontana,Calif. K1 ....6.225
IndianaHarbor,Ind. I-2 5.275
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
Phoenixville,Pa. P4 ....5.325
S.Chicago,Ill. U5 .....5.275
Weirton,W.Va. W6 ....5.275

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.65
KansasCity,Mo. S5 ....6.65
Munhall,Pa. U5 .....6.55
S.Chicago,Ill. U5 .....6.55

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....7.75
Bessemer,Ala. T2 .....7.75
Bethlehem,Pa. B2 .....7.80
Clairton,Pa. U5 .....7.75
Fairfield,Ala. T2 .....7.75
Fontana,Calif. K1 ....8.55
Gary,Ind. U5 .....7.75
Geneva,Utah C11 .....7.75
Houston S5 .....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 .....7.80
KansasCity,Mo. S5 ....7.85
Lackawanna,N.Y. B2 ..7.80
LosAngeles B3 .....8.45
Munhall,Pa. U5 .....7.75
Seattle B3 .....8.50
S.Chicago,Ill. U5, W14 ..7.75
S.SanFrancisco B3 ....8.40
Struthers,O. Y1 .....7.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....7.80
Lackawanna,N.Y. B2 ..7.80
Munhall,Pa. U5 .....7.75
S.Chicago,Ill. U5 .....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.325
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
S.Chicago,Ill. U5 .....5.275

STEEL SHEET PILING
Lackawanna,N.Y. B2 ..6.225
Munhall,Pa. U5 .....6.225
S.Chicago,Ill. U5 .....6.225
Weirton,W.Va. W6 ....6.225

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(15) A10 ...5.10
Atlanta A11 .....5.30
Bessemer,Ala. T2 .....5.10
Clairton,Pa. U5 .....5.10
Claymont,Del. C22 ....5.10
Cleveland J5, R2 .....5.20
Coatesville,Pa. L7 ....5.10
Conshohocken,Pa. A3 ..5.10
Ecorse Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fontana,Calif.(30) K1 ..5.90
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.10
GraniteCity,Ill. G4 ....5.20
Harrisburg,Pa. P4 .....5.10
Houston S5 .....5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Johnstown,Pa. B2 .....5.10
Lackawanna,N.Y. B2 ..5.10
LoneStar,Tex. L6 .....5.20
Mansfield,O. E6 .....5.10
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Pittsburgh J5 .....5.10
Riverdale,Ill. A1 .....5.10
Seattle B3 .....6.00
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14 ..5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 .....5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Youngstown U5, Y1 ....5.10

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....6.75
Fontana,Calif. K1 .....7.55
Geneva,Utah C11 .....6.75
Houston S5 .....6.85
Johnstown,Pa. B2 .....6.75
SparrowsPoint,Md. B2 ..6.75

PLATES, Wrought Iron
Economy,Pa. B14 ....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.625
Bessemer,Ala. T2 .....7.625
Clairton,Pa. U5 .....7.625
Claymont,Del. C22 ....7.625
Cleveland J5, R2 .....7.625
Coatesville,Pa. L7 ....7.625
Conshohocken,Pa. A3 ..7.625
Economy,Pa. B14 .....7.625
Ecorse,Mich. G5 .....7.625
Fairfield,Ala. T2 .....7.625
Farrell,Pa. S3 .....7.625
Fontana,Calif.(30) K1 ..8.325
Gary,Ind. U5 .....7.625
Geneva,Utah C11 .....7.625
Houston S5 .....7.725
Ind.Harbor,Ind. I-2, Y1 7.625
Johnstown,Pa. B2 .....7.625
Munhall,Pa. U5 .....7.625
Pittsburgh J5 .....7.625
Seattle B3 .....8.525
Sharon,Pa. S3 .....7.625
S.Chicago,Ill. U5, W14 ..7.625
SparrowsPoint,Md. B2 ..7.625
Warren,O. R2 .....7.625
Youngstown U5 .....7.625

PLATES, ALLOY
Aliquippa,Pa. J5 .....7.20
Claymont,Del. C22 .....7.20
Coatesville,Pa. L7 .....7.20
Economy,Pa. B14 .....7.20
Fontana,Calif. K1 .....8.00
Gary,Ind. U5 .....7.20
Houston S5 .....7.30
Ind.Harbor,Ind. Y1 .....7.20
Johnstown,Pa. B2 .....7.20
Lowellville,O. S3 .....7.20
Munhall,Pa. U5 .....7.20
Newport,Ky. A2 .....7.20
Pittsburgh J5 .....7.20
Seattle B3 .....8.10
Sharon,Pa. S3 .....7.20
S.Chicago,Ill. U5, W14 ..7.20
SparrowsPoint,Md. B2 ..7.20
Youngstown Y1 .....7.20

FLOOR PLATES
Cleveland J5 .....6.175
Conshohocken,Pa. A3 ..6.175
Ind.Harbor, Ind. I-2 ..6.175
Munhall,Pa. U5 .....6.175
S.Chicago,Ill. U5 .....6.175

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.35
Ashland l.c.l.(15) A10..5.85
Cleveland c.l. R2 .....5.85
Warren,O. c.l. R2 .....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.425
Aliquippa,Pa.(9) J5 ..5.425
Alton,Ill. L1 .....5.625
Atlanta(9) A11 .....5.625
Bessemer,Ala.(9) T2 ..5.425
Birmingham(9) C15 ...5.425
Buffalo(9) R2 .....5.425
Clairton,Pa.(9) U5 ....5.425
Cleveland (9) R2 ....5.425
Ecorse,Mich.(9) G5 ...5.425
Emeryville,Calif. J7 ...6.175
Fairfield,Ala.(9) T2 ...5.425
Fairless,Pa.(9) U5 ....5.575
Fontana,Calif.(9) K1 ...6.125
Gary,Ind.(9) U5 .....5.425
Houston(9) S5 .....5.675
Ind Harbor(9) I-2, Y1..5.425
Johnstown,Pa.(9) B2 ..5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo.(9) S5..6.675
Lackawanna(9) B2 ....5.425
LosAngeles(9) B3 .....6.125
Midland,Pa.(23) C18 ...5.725
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
N.Tonawanda,N.Y.(23)B11 5.775
Owensboro,Ky.(9) G8 ...5.425
Pittsburg,Calif.(9) C11 6.125
Pittsburgh(9) J5 .....5.425
Portland,Oreg. O4 .....6.175
Seattle B3, N14 .....6.175
S.Ch'c'go(3)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5 ..5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ...5.525
Struthers,O.(9) Y1 ....5.425
Tonawanda,N.Y. B12 ...5.425
Torrance,Calif.(9) C11 .6.125
Youngstown(9)R2, U5 ..5.425

BARS, H.R. Leaded Alloy (Including leaded extra)
Warren,O. C17 .....7.475

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.475
Bethlehem,Pa. B2 .....6.475
Bridgeport,Conn. C32 ...6.55
Buffalo R2 .....6.475
Canton,O. R2, T7 .....6.475
Clairton,Pa. U5 .....6.475
Detroit S41 .....6.475
Economy,Pa. B14 .....6.475
Ecorse,Mich. G5 .....6.475
Fairless,Pa. U5 .....6.625
Farrell,Pa. S3 .....6.475
Fontana,Calif. K1 ....7.525
Gary,Ind. U5 .....6.475
Houston S5 .....6.725
Ind.Harbor,Ind. I-2, Y1..6.475
Johnstown,Pa. B2 .....6.475
KansasCity,Mo. S5 ....6.725
Lackawanna,N.Y. B2 ..6.475
Lowellville,O. S3 .....6.475
LosAngeles B3 .....7.525
Massillon,O. R2 .....6.475
Midland,Pa. C18 .....6.475
Owensboro,Ky. G8 .....6.475
Pittsburgh J5 .....6.475
Sharon,Pa. S3 .....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ...6.475
Struthers,O. Y1 .....6.475
Warren,O. C17 .....6.475
Youngstown U5 .....6.475

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ....7.925
Bessemer,Ala. T2 .....7.925
Bethlehem,Pa. B2 .....7.925
Clairton,Pa. U5 .....7.925
Cleveland R2 .....7.925
Ecorse,Mich. G5 .....7.925
Fairfield,Ala. T2 .....7.925
Fontana,Calif. K1 ....8.625
Gary,Ind. U5 .....7.925
Houston S5 .....8.175
Ind.Harbor,Ind. Y1 ....7.925
Johnstown,Pa. B2 .....7.925
KansasCity,Mo. S5 ....8.175
Lackawanna,N.Y. B2 ..7.925
LosAngeles B3 .....8.625
Pittsburgh J5 .....7.925
Seattle B3 .....8.675
S.Chicago,Ill. U5, W14 7.925
S.Duquesne,Pa. U5 ....7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 .....7.925
Youngstown U5 .....7.925

BAR SIZE ANGLE; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.575
Houston(9) S5 .....5.675
KansasCity,Mo.(9) S5 .5.675
Lackawanna(9) B2 ....5.425
Sterling,Ill. N15 .....5.525
Sterling,Ill.(1) N15 ....5.425
Tonawanda,N.Y. B12 ...5.425

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.425
Atlanta A11 .....5.625
Joliet,Ill. P22 .....5.425
Niles,Calif. P1 .....6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SanFrancisco S7 .....6.275
Seattle B3 .....6.175

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.80
KansasCity,Mo. S5 ....6.80
Pittsburgh J5 .....6.55
Youngstown U5 .....6.55

BARS, C.F., Leaded Alloy (Including leaded extra)
Ambridge,Pa. W18 ....9.925
BeaverFalls,Pa. M12 ..9.925
Camden,N.J. P13 ....10.10
Chicago W18 .....9.925
Cleveland C20 .....9.925*
Elyria,O. W8 .....9.925
LosAngeles P2, S30..11.40*
Monaca,Pa. S17 .....9.925
Newark,N.J. W18 ....10.10
SpringCity,Pa. K3 ....10.10
Warren,O. C17 .....9.925

*Grade A; add 0.50c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.30
BeaverFalls,Pa. M12,R2 7.30
Birmingham C15 .....7.90
Buffalo B5 .....7.35
Camden,N.J. P13 .....7.75
Carnegie,Pa. C12 .....7.30
Chicago W18 .....7.30
Cleveland A7, C20 .....7.30
Detroit B5, P17 .....7.50
Detroit S41 .....7.30
Donora,Pa. A7 .....7.30
Elyria,O. W8 .....7.30
FranklinPark,Ill. N5 ..7.30
Gary,Ind. R2 .....7.30
GreenBay,Wis. F7 .....7.30
Hammond,Ind. J5, L2 ..7.30
Hartford,Conn. R2 ....7.80
Harvey,Ill. B5 .....7.30
LosAngeles(49) S30 ....8.75
LosAngeles P2, R2 ....8.75
Mansfield,Mass. B5 ....7.85
Massillon,O. R2 R8 ....7.30
Midland,Pa. C18 .....7.30
Monaca,Pa. S17 .....7.30
Newark,N.J. W18 .....7.75
NewCastle,Pa.(17) B4 ..7.30
Pittsburgh J5 .....7.30
Plymouth,Mich. P5 ....7.55
Putnam,Conn. W18 ....7.85
Readville,Mass. C14 ....7.85
S.Chicago,Ill. W14 ....7.30
SpringCity,Pa. K3 ....7.75
Struthers,O. Y1 .....7.30
Warren,O. C17 .....7.30
Willimantic,Conn. J5 ..7.80
Waukegan,Ill. A7 .....7.30
Youngstown F3, Y1 ....7.30

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....8.775
BeaverFalls,Pa. M12,R2 8.775
Bethlehem,Pa. B2 .....8.775
Bridgeport,Conn. C32 ..8.925
Buffalo B5 .....8.775
Camden,N.J. P13 .....8.95
Canton,O. T7 .....8.775
Carnegie,Pa. C12 .....8.775
Chicago W18 .....8.775
Cleveland A7, C20 .....8.775
Detroit B5, P17 .....8.975
Detroit S41 .....8.775
Donora,Pa. A7 .....8.775
Elyria,O. W8 .....8.775
FranklinPark,Ill. N5 ..8.775
Gary,Ind. R2 .....8.775
GreenBay, Wis. F7 .....8.775
Hammond,Ind. J5, L2..8.775
Hartford,Conn. R2 ....9.075
Harvey,Ill. B5 .....8.775
Lackawanna,N.Y. B2 ..8.775
LosAngeles P2, S30 ...10.75
Mansfield,Mass. B5 ....9.075
Massillon,O. R2, R8 ...8.775
Midland,Pa. C18 .....8.775
Monaca,Pa. S17 .....8.775
Newark,N.J. W18 .....8.95
Plymouth,Mich. P5 ....8.975
S.Chicago,Ill. W14 ....8.775
SpringCity,Pa. K3 ....8.95
Struthers,O. Y1 .....8.775
Warren,O. C17 .....8.775
Waukegan,Ill. A7 .....8.775
Willimantic,Conn. J5 ..9.075
Worcester,Mass. A7 ....9.075
Youngstown F3, Y1 ....8.775

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.425
Atlanta A11 .....5.425
Birmingham C15 .....5.425
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.425
Emeryville,Calif. J7 ...6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 .....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary,Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2, Y1 5.425
Johnstown,Pa. B2 .....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 .....5.675
Kokomo,Ind. C16 .....5.525
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ..5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ...6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 .....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ...5.425
S.SanFrancisco B3 .....6.175
SparrowsPointMd. B2 ..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..6.00
Torrance,Calif. C11 ...6.125
Youngstown R2, U5 ..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2, U8 .....7.65
Chicago U8 .....6.91
Cleveland U8 .....6.89
Houston S5 .....7.35
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 .....7.35
Lackawanna,N.Y. B2 ..6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 .....7.10
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ....7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ...7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 .18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.325
ChicagoHts. (4)(44) I-2 5.425
ChicagoHts.(4) C2 ....5.425
Franklin,Pa.(3) F5 ...5.325
Franklin,Pa.(4) F5 ...5.425
JerseyShore,Pa.(3) J8 ..5.30
Marion,O.(3) P11 ....5.325
Tonawanda(3) B12 ..5.325
Tonawanda(4) B12 ...6.00
Williamsport,Pa.(3) S19 5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....4.925
Ecorse,Mich. G5 .....4.925
Fairfield,Ala. T2 .....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Geneva,Utah C11 .....5.025
GraniteCity,Ill.(8) G4 5.025
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ...4.925
Niles,O. M21, S3 .....4.925
Pittsburg,Calif. C11 ..5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2 4.925
Steubenville,O. W10 ....4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1 ...4.925

SHEETS, H.R. (19) Ga. & Lighter

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 .....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.275
Fairfield,Ala. T2 .....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna(35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14 7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2 7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ....7.275
Youngstown U5, Y1 ..7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.05
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ....6.05
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 ....6.15
Ind.Harbor,Ind. I-2, Y1 6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparrowsPoint,Md. B2 ..6.05
Steubenville,O. W10 ....6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Cleveland J5, R2 .....8.975
Ecorse,Mich G5 .....8.975
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ..10.275
Gary,Ind. U5 .....8.975
IndianaHarbor,Ind. Y1 8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint(38) B2..8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert	Cu Steel	Cu Fe
Ashland,Ky. A10	6.95	7.20
Canton,O. R2	6.95	7.45
Fairfield T2	6.95	7.20
Gary,Ind. U5	6.95	7.20
GraniteCity,Ill. G4	7.05	...
Ind.Harbor I-2	6.95	7.20
Irvin,Pa. U5	6.95	7.20
Kokomo,Ind. C16	7.05	...
MartinsFry. W10	6.95	7.20
Pitts.,Calif. C11	7.70	...
Pittsburgh J5	6.95	...
SparrowsPt. B2	6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....7.20

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 ..6.60†
Ashland,Ky. A10 .....6.60†
Canton,O. R2 .....6.60‡
Dover,O. E6 .....6.60†
Fairfield,Ala. T2 .....6.60†
Gary,Ind. U5 .....6.60†
GraniteCity,Ill. G4 ....6.70*
Ind.Harbor,Ind. I-2 ....6.60†
Irvin,Pa. U5 .....6.60†
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11 ....7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ..6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ..9.725

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.425
Niles,O.(28) R2 .....7.425
Youngstown J5 .....7.275
Weirton,W.Va. W6 ....7.275

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.25
Butler,Pa. A10 (type 2) 9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.625
Cleveland R2 .....6.625
Fairfield,Ala. T2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.725
Ind.Harbor,Ind. I-2, Y1 6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 .....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.65
Ind.Harbor,Ind. I-2 ..8.475
Yorkville,O. W10 .....8.475

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, R2, S3 ..7.00
Weirton,W.Va. W6 ....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.40

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md.Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	4.925
Allenport,Pa. P7	4.925
Alton,Ill. L1	5.125
Ashland,Ky.(8) A10	4.925
Atlanta A11	4.925
Bessemer,Ala. T2	4.925
Birmingham C15	4.925
Buffalo(27) R2	4.925
Conshohocken,Pa. A3	4.975
Detroit M1	5.025
Ecorse,Mich. G5	4.925
Fairfield,Ala. T2	4.925
Fontana,Calif. K1	5.675
Gary,Ind. U5	4.925
Ind.Harbor,Ind. I-2, Y1	4.925
Johnstown,Pa.(25) B2	4.925
Lackaw'na,N.Y.(25) B2	4.925
LosAngeles(25) B3	5.675
Minnequa,Colo. C10	6.025
Riverdale,Ill. A1	4.925
SanFrancisco S7	6.35
Seattle(25) B3	5.925
Seattle N14	6.35
Sharon,Pa. S3	4.925
S.Chicago W14	4.925
S.SanFrancisco(25) B3	5.675
SparrowsPoint,Md. B2	4.925
Sterling,Ill.(1) N15	4.925
Sterling,Ill. N15	5.025
Torrance,Calif. C11	5.675
Warren,O. R2	4.925
Weirton,W.Va. W6	4.925
Youngstown U5	4.925

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.10
Gary,Ind. U5	8.10
Houston S5	8.35
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.35
LosAngeles B3	9.30
Lowellville,O. S3	8.10
Newport,Ky. A2	8.10
Sharon,Pa. A2, S3	8.10
S.Chicago,Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	7.325
Conshohocken,Pa. A3	7.325
Ecorse,Mich. G5	7.325
Fairfield,Ala. T2	7.325
Farrell,Pa. S3	7.325
Gary,Ind. U5	7.325
Ind.Harbor,Ind. I-2, Y1	7.325
Lackawanna,N.Y. B2	7.325
LosAngeles(25) B3	8.075
Seattle(25) B3	8.325
Sharon,Pa. S3	7.325
S.Chicago,Ill. W14	7.325
S.SanFrancisco(25) B3	8.075
SparrowsPoint,Md. B2	7.325
Warren,O. R2	7.325
Weirton,W.Va. W6	7.325
Youngstown U5, Y1	7.325

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.175
Warren,O. R2	5.675

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Dearborn,Mich. D3	7.15
Detroit D2, M1, P20	7.15
Dover,O. G6	7.15
Ecorse,Mich. G5	7.15
Evanston,Ill. M22	7.25
Follansbee,W.Va. F4	7.15
Fontana,Calif. K1	9.00
FranklinPark,Ill. T6	7.25
Ind.Harbor,Ind. Y1	7.15
Indianapolis J5	7.30
LosAngeles J5	9.05
LosAngeles C1	9.20
NewBedford,Mass. R10	7.60
NewBritain,Conn. S15	7.60
NewCastle,Pa. B4, E5	7.15
NewHaven,Conn. D2	7.60
NewKensington,Pa. A6	7.15
Pawtucket,R.I. R3	7.80
Pawtucket,R.I. NS	7.70
Philadelphia P24	7.70
Pittsburgh J5	7.15
Riverdale,Ill. A1	7.25
Rome,N.Y.(32) R6	7.15
Sharon,Pa. S3	7.15
Trenton,N.J.(31) R5	8.60
Wallingford,Conn. W2	7.60
Warren,O. R2, T5	7.15
Weirton,W.Va. W6	7.15
Worcester,Mass. A7	7.70
Youngstown J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.05
Farrell,Pa. S3	15.05
FranklinPark,Ill. T6	15.05
Harrison,N.J. C18	15.05
Indianapolis J5	15.20
Lowellville,O. S3	15.05
Pawtucket,R.I. NS	15.40
Riverdale,Ill. A1	15.05
Sharon,Pa. S3	15.05
Worcester,Mass. A7	15.35
Youngstown J5	15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn,Mich. D3	10.60
Dover,O. G6	10.45
Ecorse,Mich. G5	10.50
Farrell,Pa. S3	10.50
Ind.Harbor,Ind. Y1	10.65
Sharon,Pa. S3	10.50
Warren,O. R2	10.45
Weirton,W.Va. W6	10.50
Youngstown Y1	10.65

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	7.90

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.15*
Evanston,Ill. M22	7.25*
Riverdale,Ill. A1	7.25*
Warren,O. B9, T5	7.15*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3	7.275

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale,Ill. A1	5.50
Sharon,Pa. S3	5.35
Youngstown U5	5.35

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	...	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. NS	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	....	....
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	18.45	22.30	26.65
Harrison,N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Palmer,Mass. W12	18.10	....	....
Trenton,N.J. R5	18.10	21.95	26.30
Worcester,Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

SILICON STEEL

H.R. SHEETS(22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	11.80	12.90	13.95
Mansfield,O. E6	9.625	11.10	11.80	12.90	13.95
Newport,Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles,O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift,Pa. U5	....	11.10	11.80	12.90	13.95
Warren,O. R2	9.625	11.10	11.80	12.90	....
Zanesville,O. A10	....	11.10	11.80	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.725*	10.95*	11.65*	12.75*	....
IndianaHarbor,Ind. I-2	9.625†	10.85*	11.55*	12.65*	....
Mansfield,O. E6	9.625*	11.35	12.05	13.15	14.20
Vandergrift,Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren,O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville,O. A10	....	11.35†	12.05	13.15	14.20
					Stator
Vandergrift,Pa. U5	....	....	....	....	7.85

H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift,Pa. U5	15.00	15.55	16.05	17.10
Zanesville,O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	17.60	19.20	19.70	20.20	15.25††
Butler,Pa. A10	....	....	19.20	19.70	20.20	....
Vandergrift,Pa. U5	16.60	17.60	19.20	19.70	20.20	15.25**
Warren,O. R2	....	....	....	....	....	15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower. ††Coils only.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif. K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va. W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	$7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	7.65
Aliquippa,Pa. J5	7.65
Alton,Ill. L1	7.85
Atlanta A11	7.65
Bartonville,Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville,Ind. MS	7.75
Donora,Pa. A7	7.65
Duluth A7	7.65
Fairfield,Ala. T2	7.65
Fostoria,O.(24) S1	7.75
Houston S5	7.90
Jacksonville,Fla. MS	8.00
Johnstown,Pa. B2	7.65
Joliet,Ill. A7	7.65
KansasCity,Mo. S5	7.90
Kokomo,Ind. C16	7.75
LosAngeles B3	8.60
Minnequa,Colo. C10	7.90
Monessen,Pa. P7, P16	7.65
N.Tonawanda,N.Y. B11	7.65
Palmer,Mass. W12	7.95
Pittsburg,Calif. C11	8.60
Portsmouth,O. P12	7.65
Rankin,Pa. A7	7.65
S.Chicago,Ill. R2	7.65
S.SanFrancisco C10	8.60
SparrowsPoint,Md. B2	7.75
Sterling,Ill.(1) N15	7.65
Sterling,Ill. N15	7.75
Struthers,O. Y1	7.65
Waukegan,Ill. A7	7.65
Worcester,Mass. A7	7.95

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	12.65
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	12.65
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	12.85
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	12.95
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	12.75
Struthers,O. Y1	12.65
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.30
Alton,Ill. L1	9.50
Buffalo W12	9.30
Cleveland A7	9.30
Donora,Pa. A7	9.30
Duluth A7	9.30
Johnstown,Pa. B2	9.30
KansasCity,Mo. S5	9.55
LosAngeles B3	10.25
Minnequa,Colo. C10	9.50
Monessen,Pa. P7, P16	9.30
NewHaven,Conn. A7	9.60
Palmer,Mass. W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.30
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.30
S.SanFrancisco C10	10.25
SparrowsPt.,Md. B2	9.40
Struthers,O. Y1	9.30
Trenton,N.J. A7	9.60
Waukegan,Ill. A7	9.30
Worcester A7, J4, T6	9.60

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	15.80
Bartonville,Ill. K4	15.70
Buffalo W12	15.60
Chicago W13	15.60
Cleveland A7	15.60
Crawfordsville,Ind. MS	15.70
Fostoria,O. S1	15.60
Houston S5	15.85
Jacksonville,Fla. MS	15.95
Johnstown,Pa. B2	15.60
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	15.60
Minnequa,Colo. C10	15.85
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	15.80
Palmer,Mass. W12	15.90
S.SanFrancisco C10	16.45
Waukegan,Ill. A7	15.60
Worcester,Mass. A7, T6	15.90

ROPE WIRE (A)

Bartonville,Ill. K4	12.75
Buffalo W12	12.75
Fostoria,O. S1	12.75
Johnstown,Pa. B2	12.75
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.05
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.05
SparrowsPt.,Md. B2	12.85
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

	Col.
Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. MS	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock	Colo.
AlabamaCity,Ala. R2	.173
Aliquippa,Pa. J5	.173
Atlanta A11	.175
Bartonville,Ill. K4	.175
Chicago W13	.173
Cleveland A9	.173
Crawfordsville,Ind. MS	.175
Donora,Pa. A7	.173
Duluth A7	.173
Fairfield,Ala. T2	.173
Houston S5	.178
Jacksonville,Fla. MS	.175
Johnstown,Pa. B2	.173
Joliet,Ill. A7	.173
KansasCity,Mo. S5	.178
Kokomo,Ind. C16	.175
Minnequa,Colo. C10	.178
Monessen,Pa. P7	.173
Pittsburg,Calif. C11	.192
Rankin,Pa. A7	.173
S.Chicago,Ill. R2	.173
SparrowsPt.,Md. B2	.175
Sterling,Ill.(7) N15	.175
Worcester,Mass. A7	.179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES	Col.
AlabamaCity,Ala. R2	.175
Aliquippa,Pa. J5	.175
Atlanta A11	.177
Bartonville,Ill. K4	.177
Crawfordsville,Ind. MS	.177
Donora,Pa. A7	.175
Duluth A7	.175
Fairfield,Ala. T2	.175
Houston S5	.180
Jacksonville,Fla. MS	.177
Johnstown,Pa. B2	.175
Joliet,Ill. A7	.175
KansasCity,Mo. S5	.180
Kokomo,Ind. C16	.177
Minnequa,Colo. C10	.180
Pittsburgh,Calif. C11	.194
Rankin,Pa. A7	.175
S.Chicago,Ill. R2	.175
SparrowsPt.,Md. B2	.177
Sterling,Ill.(7) N15	.175
Worcester,Mass. A7	.181

TIE WIRE, Automatic Baler
(14½ Ga.)(Per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. MS	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. MS	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. MS	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. MS	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill. (37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. MS	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. MS	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.Md. B2	10.75
Sterling,Ill. (37) N15	10.75

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	.212
Atlanta A11	.214
Bartonville,Ill. K4	.214
Crawfordsville,Ind. MS	.214
Donora,Pa. A7	.212
Duluth A7	.212
Fairfield,Ala. T2	.212
Houston S5	.217
Jacksonville,Fla. MS	.214
Joliet,Ill. A7	.212
KansasCity,Mo. S5	.217
Kokomo,Ind. C16	.214
Minnequa,Colo. C10	.217
Pittsburg,Calif. C11	.236
S.SanFrancisco C10	.236
SparrowsPt.,Md. B2	.214
Sterling,Ill.(7) N15	.214

FENCE POSTS

	Col.
Birmingham C15	.172
ChicagoHts.,Ill. C2, I-2	.172
Duluth A7	.172
Franklin,Pa. F5	.172
Huntington,W.Va. C15	.172
Johnstown,Pa. B2	.172
Marion,O. P11	.172
Minnequa,Colo. C10	.177
Sterling,Ill.(1) N15	.172
Tonawanda,N.Y. B12	.174

WIRE, Barbed	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	.190§
Atlanta A11	.198*
Bartonville,Ill. K4	.198
Crawfordsville,Ind. MS	.198
Donora,Pa. A7	.193*
Duluth A7	.193*
Fairfield,Ala. T2	.193*
Houston S5	.198**
Jacksonville,Fla. MS	.198
Johnstown,Pa. B2	.196§
Joliet,Ill. A7	.193*
KansasCity,Mo. S5	.198**
Kokomo,Ind. C16	.195*
Minnequa,Colo. C10	.198**
Monessen,Pa. P7	.196§
Pittsburg,Calif. C11	.213*
Rankin,Pa. A7	.193*
S.Chicago,Ill. R2	.193**
S.SanFrancisco C10	.213*
SparrowsPoint,Md. B2	.198§
Sterling,Ill.(7) N15	.198††

WOVEN FENCE, 9-15 Ga. Col.

Ala.City,Ala. R2	.187**
Alig'ppa,Pa.9-14½ga.J5	.190§
Atlanta A11	.192*
Bartonville,Ill. K4	.192
Crawfordsville,Ind. MS	.192
Donora,Pa. A7	.187*
Duluth A7	.187*
Fairfield,Ala. T2	.187*
Houston S5	.192**
Jacksonville,Fla. MS	.192
Johnstown,Pa.(43) B2	.190§
Joliet,Ill. A7	.187*
KansasCity,Mo. S5	.192**
Kokomo,Ind. C16	.189*
Minnequa,Colo. C10	.192**
Pittsburg,Calif. C11	.210*
Rankin,Pa. A7	.187*
S.Chicago,Ill. R2	.187**
Sterling,Ill.(7) N15	.192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15	18.70**
Alig'ppa,Pa. J5	.17.15	18.95
Bartonville,Ill. K4	.17.25	19.05
Cleveland A7	.17.15	....
Craw'dsville MS	17.25	19.05
Fostoria,O. S1	.17.65	19.20†
Houston S5	....17.40	18.95**
Jacksonville MS.	.17.25	19.05
Johnstown B2	.17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo C16	.17.25	18.80†
Minnequa C10	17.40	18.95**
Pitm'r,Mass.W12	17.45	19.00†
Pitts.,Calif. C11	17.50	19.05†
SparrowsPt. B2	17.25	19.05§
Sterling(37)N15	17.25	19.05††
Waukegan A7	.17.15	18.70†
Worcester A7	.17.45	....

WIRE, Merchant Quality (6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	8.65	9.20**
Aliquippa J5	....8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	8.75	9.425
Buffalo W12	....8.65	9.20†
Cleveland A7	....8.65	....
Crawfordsville MS	8.75	9.425
Donora,Pa. A7	..8.65	9.20†
Duluth A7	.....8.65	9.20†
Fairfield T2	.....8.65	9.20†
Houston(48) S5	8.90	9.45**
Jacks'ville,Fla. MS	8.75	9.425
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	....8.65	9.20†
Kans.City(48) S5	8.90	9.45**
Kokomo C16	....8.75	9.30†
LosAngeles B3	9.60	10.275§
Minnequa C10	..8.90	9.45**
Monessen P7(48)	8.65	9.325§
Palmer,Mass. W12	8.95	9.50†
Pitts.Calif. C11	.9.60	10.15†
Rankin,Pa. A7	..8.65	9.20†
S.Chicago R2	..8.65	9.20**
S.SanFran. C10	.9.60	10.15**
Spar'wsPt.B2(48)	8.75	9.425§
Sterling(48) N15	8.90	9.575††
Sterling(1) (48)	8.80	9.475††
Struthers,O. Y1	..8.65	9.30†
Worcester,Mass.A7	8.95	9.50†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts
Full Size Body (cut thread)

½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts
Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or longer than 6 in.	39.0

Blank Bolts 39.0
Step, Elevator, Tire Bolts 49.0
Stove Bolts, Slotted:

⅛ to ¼ in. incl., 3 in. and shorter	55.0
⅝ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:
All sizes 55.5
Square Nuts, Reg. &
Heavy, Hot Galvanized:
All sizes 41.0
Hex Nuts, Reg. &
Heavy, Hot Pressed:

⅜ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. &
Heavy, Cold Punched:

⅜ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types,
Hot Galvanized:

⅜ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished,
Heavy (Incl. Slotted):

⅜ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅜ in. and smaller	60.5
⅞ in. to 1 in., incl.	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)
Hex Head Capscrews, Coarse or fine Thread, Bright:

6 in. and shorter:	
⅜ in. and smaller	40.0
⅞, ⅞, and 1 in. diam.	22.0
Longer than 6 in.:	
⅜ in. and smaller	8.0
⅞, ⅞, and 1 in. diam.	+ 6.0
High Carbon, Heat Treated:	
6 in. and shorter:	
⅜ in. and smaller	26.0
⅞, ⅞, and 1 in. diam.	3.0
Longer than 6 in.:	
⅜ in. and smaller	+ 13.0
⅞, ⅞, and 1 in. diam.	+ 32.0
Flat Head Capscrews:	
⅜ in. and smaller	+ 76.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:

6 in. and shorter	Net
Longer than 6 in.	+ 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.25
⅞ in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft. mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2¼	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60-lb Under
Rails				
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	...(16)	6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer, Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1½ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.30c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	62.75
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	92.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	84.50	89.25	88.50
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	95.25	106.75	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	35.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.00	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	42.00
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	39.75
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.50	49.50	54.50	58.25
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.00	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Strip, Carbon Base —Cold Rolled— Both Sides
Copper*	33.10	38.75

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20	4.25	1.6	12.25	....	4.285
18	4.25	1	4.75	....	2.500
18	4	2	9	....	2.870
18	4	2	....	....	1.960
18	4	1	....	....	1.795
9	3.5	..	....	....	1.395
13.5	4	3	....	....	2.060
13.75	3.75	2	5	....	2.440
6.4	4.5	1.9	....	5	1.300
6	4	3	....	6	1.545
1.5	4	1	....	8.5	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood, Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry. $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry. 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.68	....	8.76	9.06	11.34#	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	9.00	9.45	10.70
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	7.10	8.40	8.45	54.32	7.25	7.20	11.10	13.50	7.25	8.05	9.30
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.45	9.40	12.00	57.60	8.90	8.75	12.10	16.10	8.70	8.85	11.00
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76#	15.09	9.35	9.43	10.66
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.70	8.65	11.51#	15.01	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45	9.70	13.00#	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	.....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extra; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [3]—400 to 9999 lb; [8]—1000 to 1999 lb; [9]—2000 to 3999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 Per Cent: St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $245.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Clearfield, Orviston, Snow Shoe, Pa., $305; Philadelphia, $310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Clearfield, Orviston, Snow Shoe, Pa., $345; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ¾ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60% $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $30-$33, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $27.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over..	10.50
F.o.b. Riverton or Camden, N. J., west of Mississippi River.	9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ¼ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh).	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

Aluminum: Atomized, 500-lb drum, freight allowed Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	30.30-45.70†
Bronze, 5000-lb lots	45.70-49.80†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	47.80-52.60†
Phosphor-Copper, 5000-lb lots	57.80
Copper (atomized) 5000-lb lots	38.30-46.80†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.05	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb. net reel. §Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68.5%	14.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$9.50-10.00
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $134.40 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$46.00-48.00
48% 2.8:1	42.00-44.00
48% no ratio	32.00-34.00
South African Transvaal	
48% no ratio	$32.00-34.00
44% no ratio	24.00-25.00
Turkish	
48% 3:1	$51.00-55.00
Domestic Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $1.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00
Per ton, bulk, ovens	
Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton; $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, SM x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c, for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delievered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅝ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.5c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained. f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of containd Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy; ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c; less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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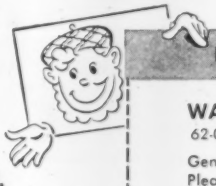

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Sagging Steel Rate Stalls Scrap

Turndown in operations dulls market prospects. STEEL's composite on the prime grade holds at $35, but a decline is anticipated over the vacation period

Scrap Prices, Page 142

Chicago—The local scrap market is reflecting the reduced steelmaking rate in prospect for July. But with only a few exceptions prices have held at the same level for two weeks. Only a few mills are buying, and the purchases are little more than in token volume. Blast furnace and cast grades, which have held comparatively steady for several weeks, are off $1 to $2 a ton. July will be a light month for foundry scrap because most shops will be closing two weeks or more for vacations.

Pittsburgh — Market activity is limited. Brokers think factory bundles offered by an automotive company will bring about the same price as last month ($40.65), possibly less. Short shovel turnings have no market locally, but prices are higher because of purchases by a mill outside the district. It's paying $28 a ton delivered.

Philadelphia—The scrap market here continues dull with prices on No. 1 bundles and No. 1 busheling easier at $34, delivered. Rail crops, 2 ft and under, are lower at $55-$56, delivered. Prices on all other steel and cast iron grades are unchanged, and, in some cases, quotations are nominal—including mixed borings and turnings, and malleable iron.

New York — Brokers' buying prices on the major grades of iron and steel scrap continue unchanged. There is little consuming pressure. Prices on nickel bearing scrap are higher. Though demand is not strong, supply is limited, and 18-8 sheets, clips, and solids are quoted at $155-$160; 18-8 borings and turnings, $50-$55. The chromium grades are unchanged.

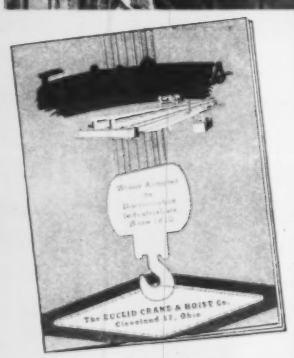
Boston—Prices on the prime steelmaking grades of scrap are off $1 a ton; brokers are paying $22-$23, shipping point, for No. 1 heavy melting.

Shipments are at a low point, and the slack domestic demand is matched by a decline in buying for export.

Cleveland—Not much activity is anticipated in the scrap market here the next few weeks. The July 4 holiday will be followed by vacation shutdowns at many manufacturing plants. This will mean less scrap generation. Steelmaking also may be affected, lessening demand for scrap. Resumption of production at Jones & Laughlin Steel's Cleveland Works, idle since February, provides an encouraging note in an otherwise dull market situation. Steelmaking will be resumed gradually at this works, starting July 5.

Youngstown — Some industrial scrap was taken by a local steel mill

Built "UP TO A STANDARD"... not "DOWN TO A PRICE"



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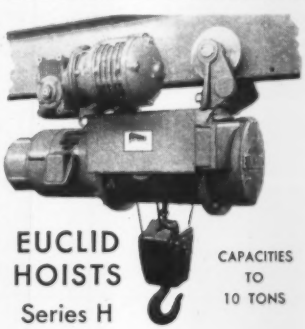

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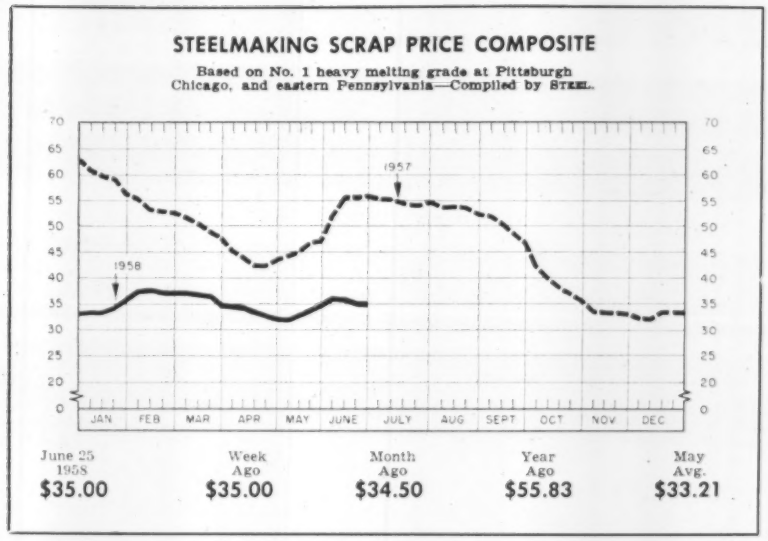

STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
June 25 1958 $35.00
Week Ago $35.00
Month Ago $34.50
Year Ago $55.83
May Avg. $33.21

last week, but the transaction did not affect the market, which continues to mark time. Considerable scrap is being buried in dumps because current low prices are too unattractive to encourage collections by peddlers.

Detroit—The local scrap market is inactive. Brokers and dealers are waiting for the next auto lists, out at the end of June. The feeling is that prices on the lists will be several dollars lower because mills have more than enough scrap to carry them through the summer. One broker estimates Detroit area mills have enough material on the ground to support three months' operations near capacity—longer at present operating rates.

Buffalo—With steel mill operations declining, the outlook for scrap business is not promising. Dealers anticipate a dull July, but they think prices will hold around current levels.

Incoming shipments are light. They'll be lighter beginning next month when metalworking plants close down for vacations.

Cincinnati—Brokers' prices are unchanged, but the market undertone is weak. Lower steel operations, forecast for July, are expected to further weaken scrap prices. Dealers aren't pressing scrap onto the market, the mills holding ample inventories. A price stalemate may be in the making.

St. Louis—The market here is quiet. July prospects for a pickup in buying are not promising. Mills have plenty of material on hand and vacation closings and curtailments will cut requirements. Prices are expected to ease over the rest of the summer with a spurt developing after Labor Day.

Birmingham — An Atlanta mill and a Birmingham pipe foundry returned to the market last week, but prices for heavy melting steel and cast scrap remained unchanged. Brokers cut prices on three railroad items, but quotations are nominal.

Houston—Scrap trade activity is restricted. Despite encouraging steel mill operations, heavy inventories preclude large buying over coming weeks. One area mill supported the market in June with a limited order.

Export trade is reviving slowly. A cargo, half No. 1 and half No. 2 heavy melting steel, is being loaded for Formosa. Another is expected to move from Baton Rouge, La., to Japan in July or August. A third cargo, No. 2 bundles, also may be shipped to Japan.

Los Angeles — Little change is noted in the local scrap market. Yards are idle. Dealers' inventories are high with trading limited.

Washington — Stocks of ferrous metallics (scrap and pig iron) held by consumers at the end of April totaled a record 11,850,000 gross tons (8,251,000 scrap and 3,599,000 pig iron), reports the U. S. Bureau of Mines. Separate records were set for scrap (up 2 per cent from the end of March) and pig iron (up slightly).

Consumption during the month amounted to 6,807,000 gross tons (3,429,000 scrap and 3,378,000 pig iron). The melt was 50 per cent scrap and pig iron, vs. 49 per cent scrap and 51 per cent pig iron in March.

Comparative data follow:

Scrap for Consumption
(Gross tons)

Months	Home Produced	Purchased	Totals
Nov. 1957 ..	2,990,946	1,733,128	4,724,074
Dec. 1957 ..	2,686,210	1,580,375	4,266,585
Jan. 1958 ..	2,627,799	1,402,968	4,030,767
Feb. 1958 ..	2,193,112	1,305,930	3,499,042
Mar. 1958 ..	2,306,638	1,545,346	3,851,984
Apr. 1958 ..	2,106,000	1,466,000	3,572,000

Ferrous Metal Consumption
(Gross tons)

Months	Scrap	Pig Iron	Totals
Nov. 1957 ..	4,858,489	5,073,898	9,932,387
Dec. 1957 ..	4,281,414	4,565,635	8,847,049
Jan. 1958 ..	4,072,071	4,208,692	8,280,763
Feb. 1958 ..	3,491,441	3,551,679	7,043,120
Mar. 1958 ..	3,718,132	3,824,140	7,542,272
Apr. 1958 ..	3,429,000	3,378,000	6,807,000

Consumers' Stocks, April, 1958
(Gross tons)

Months	Scrap	Pig Iron	Totals
Nov. 1957 ..	8,007,423	3,298,738	11,306,161
Dec. 1957 ..	7,990,523	3,407,767	11,398,290
Jan. 1958 ..	7,951,498	3,469,969	11,421,467
Feb. 1958 ..	7,951,446	3,458,088	11,409,534
Mar. 1958 ..	8,089,672	3,590,815	11,680,487
Apr. 1958 ..	8,251,000	3,599,000	11,850,000

Rails, Cars . . .

Track Material Prices, Page 134

The Michigan City, Ind., plant of Pullman-Standard Car Mfg. Co., closed for seven weeks due to a lack of orders, reopened June 25. It recalled 1100 workers by June 30. Production is being resumed to fill a 500-car order from the Chicago, Milwaukee, St. Paul & Pacific Railroad.

Railroad freight car orders increased for the second straight month in May. Awards totaled 1372 units, vs. 278 in April and 3370 in May, 1957. The order backlog as of June 1 was 30,386 cars, against 32,908 a month earlier.

Pig Iron . . .

Pig Iron Prices, Page 136

With the July 4 holiday week at hand, buying of pig iron has dropped more. Indications are the market will remain inactive throughout July and August due to suspension of operations at many foundries for mass vacations.

Pig iron production in several dis-

(*Please turn to Page* 147)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, June 25, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

June 25	$35.00
June 18	35.00
May Avg.	33.21
June 1957	54.89
June 1953	40.50

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	30.00-31.00
No. 1 dealer bundles	35.00-36.00
No. 2 bundles	25.00-26.00
No. 1 busheling	35.00-36.00
No. 1 factory bundles	40.00-41.00
Machine shop turnings	*16.00-17.00*
Mixed borings, turnings	*16.00-17.00*
Short shovel turnings	*20.00-21.00*
Cast iron borings	*20.00-21.00*
Cut structurals:	
2 ft and under	39.00-40.00
3 ft lengths	37.00-38.00
Heavy turnings	*31.00-32.00*
Punchings & plate scrap	*40.00-41.00*
Electric furnace bundles	37.00-38.00

Cast Iron Grades

No. 1 cupola	*39.00-40.00*
Stove plate	*39.00-40.00*
Unstripped motor blocks	23.00-24.00
Clean auto cast	*39.00-40.00*
Drop broken machinery	45.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	40.00-41.00
Rails, 2 ft and under	53.00-54.00
Rails, 18 in. and under	54.00-55.00
Random rails	50.00-51.00
Railroad specialties	44.00-45.00
Angles, splice bars	47.00-48.00
Rails, rerolling	55.00-56.00

Stainless Steel Scrap

18-8 bundles & solids	180.00-185.00
18-8 turnings	100.00-105.00
430 bundles & solids	100.00-105.00
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt., indus.	36.00-37.00
No. 1 hvy melt., dealer	34.00-35.00
No. 2 heavy melting	31.00-32.00
No. 1 factory bundles	39.00-40.00
No. 1 dealer bundles	36.00-37.00
No. 2 bundles	25.00-26.00
No. 1 busheling, indus.	36.00-37.00
No. 1 busheling, dealer	34.00-35.00
Machine shop turnings	*17.00-18.00*
Mixed borings, turnings	*19.00-20.00*
Short shovel turnings	*19.00-20.00*
Cast iron borings	*19.00-20.00*
Cut structurals, 3 ft	39.00-40.00
Punchings & plate scrap	40.00-41.00

Cast Iron Grades

No. 1 cupola	*39.00-40.00*
Stove plate	*36.00-37.00*
Unstripped motor blocks	*32.00-33.00*
Clean auto cast	*45.00-46.00*
Drop broken machinery	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
R.R. malleable	50.00-51.00
Rails, 2 ft and under	51.00-52.00
Rails, 18 in. and under	52.00-53.00
Angles, splice bars	47.00-48.00
Axles	57.00-58.00
Rails, rerolling	52.00-53.00

Stainless Steel Scrap

18-8 bundles & solids	*180.00-185.00*
18-8 turnings	95.00-100.00
430 bundles & solids	95.00-100.00
430 turnings	50.00-55.00

YOUNGSTOWN

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	22.00-23.00
No. 1 busheling	36.00-37.00
No. 1 bundles	36.00-37.00
No. 2 bundles	21.00-22.00
Machine shop turnings	9.00-10.00
Short shovel turnings	13.00-14.00
Cast iron borings	13.00-14.00
Low phos.	34.00-35.00
Electric furnace bundles	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00

CLEVELAND

No. 1 heavy melting	32.50-33.50
No. 2 heavy melting	19.00-20.00
No. 1 factory bundles	34.00-35.00
No. 1 bundles	32.50-33.50
No. 2 bundles	20.00-21.00
No. 1 busheling	32.50-33.50
Machine shop turnings	7.00-8.00
Short shovel turnings	11.00-12.00
Mixed borings, turnings	11.00-12.00
Cast iron borings	11.00-12.00
Cut foundry steel	37.00-38.00
Cut structurals, plates 2 ft and under	39.00-40.00
Low phos. punchings & plate	30.00-31.00
Alloy free, short shovel turnings	16.00-17.00
Electric furnace bundles	33.50-34.50

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	33.00-34.00
Heavy breakable cast	33.00-34.00
Stove plate	43.00-44.00
Unstripped motor blocks	25.00-26.00
Brake shoes	33.00-34.00
Clean auto cast	42.00-43.00
Burnt cast	30.00-31.00
Drop broken machinery	47.00-48.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	49.00-50.00
Cast steel	44.00-45.00
Railroad specialties	47.00-48.00
Uncut tires	40.00-41.00
Angles, splice bars	46.00-47.00
Rails, rerolling	51.00-52.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	160.00-165.00
18-8 turnings	90.00-95.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	33.00
No. 2 heavy melting	30.00
No. 1 bundles	34.00
No. 2 bundles	23.00
No. 1 busheling	33.00
Machine shop turnings	16.00†
Short shovel turnings	18.00†

Cast Iron Grades

No. 1 cupola	41.00
Charging box cast	33.00
Heavy breakable cast	33.00
Unstripped motor blocks	34.00
Clean auto cast	44.00
Stove plate	*40.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00
Rails, 18 in. and under	48.00
Rails, random lengths	*45.50*
Rails, rerolling	55.00
Angles, splice bars	44.00

BIRMINGHAM

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	19.00-20.00
No. 1 busheling	30.00-31.00
Cast iron borings	12.00-13.00
Machine shop turnings	20.00-21.00
Short shovel turnings	21.00-22.00
Bar crops and plates	37.00-38.00
Structurals & plates	36.00-37.00
Electric furnace bundles	34.00-35.00
Electric furnace; 2 ft and under	33.00-34.00
3 ft and under	32.00-33.00

Cast Iron Grades

No. 1 cupola	49.00-50.00
Stove plate	49.00-50.00
Unstripped motor blocks	38.00-39.00
Charging box cast	22.00-23.00
No. 1 wheels	34.00-35.00

Railroad Scrap

No. 1 R.R. heavy melt.	*32.00-33.00*
Rails, 18 in. and under	*46.00-47.00*
Rails, rerolling	46.00-47.00
Rails, random lengths	*42.00-43.00*
Angles, splice bars	39.00-40.00

PHILADELPHIA

No. 1 heavy melting	34.00
No. 2 heavy melting	30.00
No. 1 bundles	*34.00*
No. 2 bundles	24.00
No. 1 busheling	*34.00*
Electric furnace bundles	36.00
Mixed borings, turnings	16.00†
Short shovel turnings	18.00
Machine shop turnings	15.00
Heavy turnings	29.00
Structural & plate	39.00-40.00
Couplers, springs, wheels	43.50
Rail crops, 2 ft & under	*55.00-56.00*

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	40.00
Malleable	58.00-59.00†
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	16.00-17.00
Machine shop turnings	8.00-9.00†
Mixed borings, turnings	9.00-10.00†
Short shovel turnings	11.00-12.00†
Low phos (structurals & plates)	33.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	*155.00-160.00*
18-8 borings, turnings	*50.00-55.00*
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	60.00-65.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-27.00
Mixed borings, turnings	13.00-14.00
Machine shop turnings	10.00-11.00
Short shovel turnings	14.00-15.00
Cast iron borings	13.00-14.00
Low phos. structurals and plate, 5 ft and under	31.00-32.00
2 ft and under	35.00-36.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	39.00-40.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths	45.00-46.00
Rails, 3 ft and under	51.00-52.00
Railroad specialties	35.00-36.00

CINCINNATI

(Buyers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	27.50-28.50
No. 1 bundles	34.00-35.00
No. 2 bundles	22.00-23.00
No. 1 busheling	34.00-35.00
Machine shop turnings	11.50-12.50
Mixed borings, turnings	11.50-12.50
Short shovel turnings	13.50-14.50
Cast iron borings	11.50-12.50
Low phos. 18 in.	39.00-40.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Heavy breakable cast	32.00-33.00
Charging box cast	32.00-33.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 18 in. and under	52.00-53.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	21.00*
Machine shop turnings	14.00
Short shovel turnings	17.00
Low phos. plates, structurals	36.00*

Cast Iron Grades

No. 1 cupola	40.00
Heavy breakable	30.00†
Unstripped motor blocks	35.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*22.00-23.00*
No. 2 heavy melting	18.00-19.00
No. 1 bundles	*22.00-23.00*
No. 2 bundles	14.00-15.00
No. 1 busheling	*22.00-23.00*
Machine shop turnings	5.00-6.00
Mixed borings, turnings	5.00-6.00
Short shovel turnings	7.00-8.00
No. 1 cast	28.00-29.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	31.00-32.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	19.00-21.00
No. 1 bundles	27.00-28.00
No. 2 bundles	18.00-19.00
No. 1 busheling	26.00-27.00
Machine shop turnings	8.00-9.00
Mixed borings, turnings	9.00-10.00
Short shovel turnings	10.00-11.00
Punchings & plate	31.00-32.00

Cast Iron Grades

No. 1 cupola	34.00-35.00
Stove plate	27.00-28.00
Charging box cast	26.00-27.00
Heavy breakable	24.00-25.00
Unstripped motor blocks	14.00-15.00
Clean auto cast	35.00-36.00

SEATTLE

No. 1 heavy melting	27.00†
No. 2 heavy melting	25.00†
No. 1 bundles	21.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	20.00
Machine shop turnings	11.00
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

†Nominal.
‡F.o.b. Hamilton, Ont.

THE CITY THAT DIDN'T EXIST A MONTH AGO

Every 30 days the U. S. adds as many new Americans as live in Norfolk, Va.—creating brand-new wants and needs which must be satisfied.

What does this mean to you? It means greater opportunities than ever before—in all fields. Home construction is expected to double by 1975. Power companies plan to increase output 250% in the next 20 years to provide the power for scores of new labor-saving devices. Clothing suppliers predict a one-third increase in 7 years.

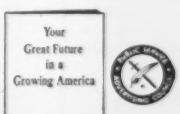
With 11,000 new citizen-consumers born every day, there's a new wave of opportunity coming.

7 BIG REASONS FOR CONFIDENCE IN AMERICA'S FUTURE

1. **More people** . . . Four million babies yearly. U. S. population has *doubled* in last 50 years! And our prosperity curve has always followed our population curve.
2. **More jobs** . . . Though employment in some areas has fallen off, there are *15 million* more jobs than in 1939—and there will be *22 million more* in 1975 than today.
3. **More income** . . . Family income after taxes is at an all-time high of $5300—is expected to pass $7000 by 1975.
4. **More production** . . . U. S. production *doubles* every 20 years. We will require millions more people to make, sell and distribute our products.
5. **More savings** . . . Individual savings are at highest level ever—*$340 billion*—a record amount available for spending.
6. **More research** . . . *$10 billion* spent each year will pay off in more jobs, better living, whole new industries.
7. **More needs** . . . In the next few years we will need *$500 billion* worth of schools, highways, homes, durable equipment. Meeting these needs will create new opportunities for everyone.

Add them up and you have the makings of another big upswing. Wise planners, builders and buyers will act *now* to get ready for it.

FREE! Send for this new 24-page illustrated booklet, "Your Great Future in a Growing America." Every American should know these facts. Drop a card today to: ADVERTISING COUNCIL, Box 10, Midtown Station, New York 18, N. Y.



(This space contributed as a public service by this magazine.)

Plateau Quarter Coming Up

Sales may pick up slightly, but business over-all should hit close to second quarter levels. Lead, zinc, and copper people are hopeful of some form of Congressional help

Nonferrous Metal Prices, Pages 146 & 147

NONFERROUS metal producers expect the third quarter to equal or better the slightly improved level of the second. They anticipate a mediocre July (because of summer vacations and a general slowdown), improvement in August, and a good September.

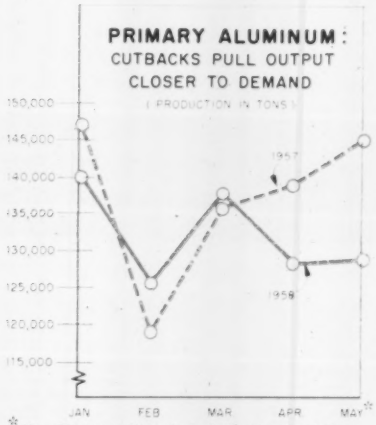
Copper — Supply and demand have moved into better balance. Second quarter sales were up over the first three months, while production dropped. Expect a July dip in demand (most brass and wire mills will shut down for vacations) followed by an upturn that should pull the period to at least second quarter heights.

Pricewise, the industry is split. Phelps Dodge Corp. and Kennecott Copper Corp. have refused to match Anaconda Co.'s price (26.5 cents a pound) and continue to quote 25 cents. Both apparently feel Anaconda's move was ill-timed. They are believed to be under pressure from subsidiary brass mills to stand pat.

Custom smelters, who had gone to 26.5 cents a pound on the basis of Anaconda's move, backtracked June 23 to 25.5 cents. Their reasons: 1. Refusal of the other primary producers to follow Anaconda. 2. Weakening of copper on the commodity exchange and the London Metal Exchange.

The Big Question—Can Anaconda maintain its price? After originally quoting a new set of prices on brass mill products through its American Brass Co. subsidiary, the company is selling mill shapes on the basis of 25 cent copper.

Price Outlook—The key is Congressional action. Consensus is the industry will get at least one of two forms of help, possibly both: 1. The Seaton stockpile proposal has strong support from some quarters of industry and Congress, but it's still not known whether enough strength can be mustered to push it through. 2. Many observers believe a bill to suspend the 1.7 cent a pound copper tariff (scheduled for July 1) will be defeated. Either development could trigger a hike in primary copper.



* May, 1958, total includes Ormet Corp.'s initial production
Source: Aluminum Association

Lead and Zinc—Lead has shown little improvement since the first quarter. Zinc sales are slightly better, largely because of greater demand for prime western from galvanizers. Zinc may pick up a bit in the third quarter (after normal July slowdowns) because of a continued stepup in galvanizing and late summer orders from diecasters for the automotive and appliance industries. Lead won't improve much.

Lead's at 11.5 cents a pound after a 0.5 cent rise on June 18. Producers will try to hold there, but it's shaky. Zinc looks firm at 10 cents a pound.

The long term price outlook is mainly dependent on Washington. Interior Secretary Seaton recently revised his mineral stabilization program (see STEEL, June 2, p. 128) to include higher support payments. They would be limited to 500 tons of lead per producer in each quarter at a price of 17 cents a pound, and 500 tons of zinc at a price of 14.5 cents a pound. Beyond the 500-ton level, payments would revert to the difference between the market price and 14.75 cents on lead and 12.75 cents on zinc.

Many metalmen are opposed to the revision. They say it would encourage reopening of marginal mines at a time when the market is already flooded. Most domestic companies would favor higher duties, but the President has announced he will sit on the Tariff Commission's recommendations until Congress acts on the Seaton proposal.

Aluminum—Sales have improved steadily since last December. Producers expect another rise in the third quarter due to increased buying from the automotive and building fields. While shipments have been on the upswing, production has been trimmed (see chart).

Producers still aren't talking about whether they'll raise prices when higher labor costs hit them Aug. 1.

Aluminum is also petitioning Congress for help. The latest move is a request from Aluminum Co. of America that the government buy 150,000 tons of pig at a price not to exceed 27 cents a pound.

NONFERROUS PRICE RECORD

	Price June 25	Last Change		Previous Price	May Avg	Apr. Avg	June, 1957 Avg
Aluminum	24.00	Apr.	1, 1958	26.00	24.000	24.000	27.100
Copper	25.00-26.50	June	17, 1958	25.00-26.00	24.433	24.323	30.250
Lead	11.30	June	18, 1958	10.80	11.512	11.800	14.120
Magnesium	35.25	Aug.	13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec.	6, 1956	64.50	74.000	74.000	74.000
Tin	94.75	June	23, 1958	95.00	94.510	93.021	98.080
Zinc	10.00	July	1, 1957	10.50	10.000	10.000	10.840

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

Pot room in modern aluminum smelter at Isle Maligne, Quebec.

To aluminum fabricators...

who want the advantages of primary production –without the overhead

Aluminum production is a complex business. To operate a smelter made up of dozens of "pot-lines" like the one above presents innumerable problems: raw material supply, vast quantities of electric power, trained personnel, careful quality supervision—the list is nearly endless. Yet this pot-line and dozens like it in Quebec and British Columbia are at your service through Aluminium Limited.

If you would like to learn how these modern aluminum plants can work for you, call your Aluminium Limited representative. His company sells no consumer products in the U.S. Instead, it specializes in bringing you the primary aluminum you need . . . produced in a wide variety of ingot forms and alloys . . . quality-controlled to assure you every manufacturing economy. In short, all the advantages of your "own" primary production—without the overhead. For information call or write the nearest office of Aluminium Limited Sales, Inc.

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Additional distribution (Alcan Foundry Alloys):
Apex Smelting Company, Chicago, Cleveland, Los Angeles
Charles Batchelder & Company, Botsford, Conn.

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.00; ingots, 26.10, 30,000 labor more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 25.00-26.50 deld.; custom smelters, 25.50; lake, 25.00-26.50 deld.; fire refined, 24.75-26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 11.30; chemical, 11.40; corroding, 11.40, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $228-230 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $70-100 per troy oz nom.

Palladium: $19-21 per troy oz.

Platinum: $62-70 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00, c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 94.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $3.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.75; No. 2, 13.25; No. 5, 13.00 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 22.50-24.00; No. 12 foundry alloy (No. 2 grade), 21.25-21.56; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 108 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.25; grade 2, 21.25; grade 3, 20.00; grade 4, 17.25.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Template, Pa., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53. Magnet wire deld., 38.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.00 per cwt; pipe, full coils, $16.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H. R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.249-0.136	41.10-45.60	.....
0.135-0.096	41.60-46.70	.....
0.125-0.096	.....	38.50-39.10
0.095-0.077	42.30-48.50	38.60-39.30
0.076-0.061	42.90-50.80	38.80-40.00
0.060-0.048	43.60-53.10	39.40-41.10
0.047-0.038	44.20-55.90	39.90-32.50
0.037-0.030	44.60-60.90	40.30-44.30
0.029-0.024	45.20-52.70	40.60-45.00
0.023-0.013	46.20-56.10	41.70-43.40
0.018-0.017	47.00-53.40	42.30-44.00
0.016-0.015	47.90-54.30	43.10-44.80
0.014	48.90	44.10-45.80
0.013-0.012	50.10	44.80
0.011	51.10	46.00
0.010-0.0095	52.60	47.40
0.009-0.0085	53.90	48.90
0.008-0.0075	55.50	50.10
0.007	57.00	51.60
0.006	58.60	53.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	41.70	46.50
5050-F	42.80	47.60
3004-F	43.80	49.50
5052-F	44.40	50.20
6061-T6	44.90	51.00
2024-T4	48.60	55.40
7075-T6*	56.40	64.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	76.20	73.20	....	....
0.156	64.20	61.40	....	....
0.172	....	61.40	....	....
0.188	64.20	61.40	....	79.60
0.203	64.20	61.40	....	....
0.219-0.234	61.00	59.50	....	....
0.250	61.00	59.50	88.40	75.90
0.266-0.281	61.00	59.50	....	....
0.313	61.00	59.50	81.40	72.20
0.344	60.50	....	81.40	....
Cold-Finished				
0.375-0.547	60.50	59.30	72.80	67.80
0.563-0.688	60.50	59.30	69.10	63.50
0.719	....	57.70	....	....
0.750-1.000	59.00	57.70	62.90	59.70
1.063	59.00	57.70	....	57.60
1.250-1.500	56.60	55.40	60.80	57.60
Rolled				
1.563	55.00	53.70	....	....
1.625-2.000	54.30	52.90	59.60	55.50
2.063	....	51.40	....	....
2.125-2.500	52.80	51.40	....	55.50
2.500-3.000	51.20	49.70	....	55.50
3.250-3.375	....	49.70	....	....

Forging Stock: Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper; 2014, 41.50-54.30; 6061, 40.90-54.30; 7075, 42.90-56.30; 7079, 43.40-56.80.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.60; 1 in., 29.35; 1¼ in., 39.75; 1½ in., 47.50; 2 in., 57.40; 4 in., 157.60; 6 in., 282.95; 8 in., 425.80.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.00-43.50	58.60-62.80
12-14	42.00-43.50	59.30-63.80
15-17	42.00-43.50	60.50-65.50
18-20	42.50-44.00	62.50-68.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	79.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.75-20.25; No. 2 heavy copper and wire, 18.00-18.50; light copper, 16.00-16.50; No. 1 composition red brass, 16.00-16.50; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.13b	45.36c	....	48.32	22.500	22.500	21.750
Yellow Brass	42.69	29.53d	43.23	45.60	17.000	16.750	15.250
Low Brass, 80%	44.90	44.84	45.44	47.71	19.000	18.750	18.250
Red Brass, 85%	45.67	45.61	46.21	48.48	19.750	19.500	19.000
Com. Bronze, 90%	46.98	46.92	47.52	49.54	20.625	20.375	19.875
Manganese Bronze	50.81	44.91	55.44	....	15.875	15.625	14.875
Muntz Metal	45.19	41.00	....	....	15.875	15.625	15.125
Naval Brass	47.07	41.38	54.13	50.48	15.625	15.375	14.875
Silicon Bronze	52.84	52.03	52.88	54.77	22.125	21.875	21.125
Nickel Silver, 10%	57.93	60.26	60.26	....	22.000	21.750	....
Phos. Bronze, A-5%	67.17	67.67	67.67	68.85	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.00-15.50; new brass clippings, 13.50-14.00; light brass, 10.00-10.50; heavy yellow brass, 11.00-11.50; new brass rod ends, 11.50-12.00; auto radiators, unsweated, 12.00-12.50; cocks and faucets, 13.00-13.50; brass pipe, 13.00-13.50.

Lead: Heavy, 7.25-7.50; battery plates, 3.00-3.25; linotype and stereotype, 9.25-9.75; electrotype, 7.50-8.00; mixed babbitt, 9.00-9.50.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.50-10.00; clean borings and turnings, 6.00-6.50; segregated low copper clips 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 13.00-14.00; mixed high copper clips, 11.00-11.50.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 9.00-9.50; clean borings and turnings, 8.00-8.50; segregated low copper clips, 15.00-15.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 14.00-14.50; mixed high copper clips, 12.50-13.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.00-9.50; clean borings and turnings, 8.00-8.50; segregated low copper clips, 12.50-13.00; segregated high copper clips, 11.00-11.50; mixed low copper clips, 11.50-12.00; mixed high copper clips, 10.50-11.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

Copper and Brass: No. 1 heavy copper and wire, 21.25; No. 2 heavy copper and wire, 20.50; light copper, 18.25; refinery brass (60% copper) per dry copper content, 20.00.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 21.25; No. 2 heavy copper and wire, 20.50; light copper, 18.25; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.00; yellow brass turnings, 12.00; radiators, 15.25.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70.

Copper: Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.

Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 200 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.

Stannous Chloride (anhydrous): Less than 25 lb, 165.30; 25 lb, 130.30; 100 lb, 115.30; 400 lb, 112.90; 5200-19,600 lb, 100.70; 20,000 lb or more, 88.50.

Stannous Sulphate: Less than 50 lb, 100.361; 50 lb, 100.061; 100-1900 lb, 100.041; 2000 lb or more, 100.021.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page* 141)

tricts has declined. In Buffalo, blast furnace operations suffered a setback as a result of reduced production of open hearth steel. The Bethlehem plant shut down one of its four active blast furnaces because it needs less hot metal for its open hearth operations.

Only six of the 15 blast furnaces in the Buffalo district remain lighted. Of these, only one is a merchant stack. There is little hope for any pickup in pig iron production until demand for steel improves or until foundries resume large scale buying of iron.

Pig Iron Output Gains

Blast furnace production (pig iron, ferromanganese, and spiegeleisen) totaled 4,073,796 net tons in May, reports the American Iron & Steel Institute. Of the total, only 25,468 tons were ferroalloys. In April, output was 3,827,209 tons (39,302 ferroalloys), and in May, 1957, it was 6,945,447 tons (65,566 ferroalloys).

Output in the first five months this year totaled 21,282, 337 tons, of which 225,860 were ferroalloys. In the same period last year, the total was 35,002,088 tons (328,928 ferroalloys). Production by states:

Blast Furnace Production
(Pig Iron, Ferromanganese, Spiegeleisen)
(Net Tons)

By State:	May, 1958	First 5 Months
Massachusetts, New York	245,406	1,423,115
Pennsylvania	1,112,166	5,727,779
Maryland, Virginia, West Virginia	503,196	2,400,014
Kentucky, Tennessee, Texas	111,305	611,163
Alabama	281,666	1,373,899
Ohio	586,634	3,289,405
Indiana	543,555	2,803,674
Illinois	248,459	1,403,066
Michigan, Minnesota	163,145	939,243
Colorado, Utah, California	278,264	1,310,979
Totals	4,073,796	21,282,337
Ferromanganese and spiegeleisen included above	25,468	225,860

Data from the American Iron & Steel Institute.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 131

The mills are doing a lively business in construction steels, notably reinforcing items. Demand for bars is good and wire fabric is moving well. At St. Louis, some problems are reported in getting releases on mesh, but the orders are on sellers' books. Delays on work and the usual processing of contracts take time. Most builders don't want fabric until they are about ready to pour concrete.

Demand for open web steel joists for floor and roof construction also is fairly active. Substantial inquiry continues for schools and other public buildings.

Effect of a Texas Highway Department regulation on use of imported steel in road projects after Sept. 1 is being watched. One survey indicates 13,000 tons of foreign reinforcing bars already stocked will be affected. Sellers predict considerable dumping of bars at low prices in event they can't find an outlet.

Iron Ore . . .

Iron Ore Prices, Page 137

Lake shipments of iron ore were the smallest for any May since 1946, reports the Lake Carriers' Association, Cleveland. The total was 4,060,611 gross tons. Only 62,560 tons were moved in April, smallest for that month in 19 years.

Stainless Steel . . .

Stainless Steel Prices, Page 135

Shipments of stainless and heat resisting steel in April totaled 33,922 net tons, of which 33,203 were stainless and 719 heat resisting, reports the American Iron & Steel Institute. In April a year ago, ship-

SALES MANAGER-ENGINEER

for industrial steel warehouse in Southern City of 800,000 population. Products handled consist of hot rolled bars, structurals, plates, sheets, cold rolled bars, reinforcing mesh, grating and includes stainless steel, aluminum and allied products as well as a complete warehouse service. Must be capable of reading plans and have experience in engineering. Logical distribution area is surrounding radius of 350 miles. We are interested only if you are experienced in steel warehouse sales, completely capable of supervising outside and inside salesmen and if you are aggressive "pusher" type. Excellent opportunity for the right man. If to accept this position you must leave your present job, give full details why you wish to leave. All replies held in strictest confidence. Please do not apply unless you completely fill qualifications. **Write Box 671, STEEL Penton Bldg. Cleveland 13, Ohio**

CLASSIFIED

Help Wanted

For steel rolling mill in Eastern United States. Experience in small shapes required. State age, experience and salary expected to Box 673, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT

high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry.
When you have an opportunity to offer, use the Help Wanted columns of STEEL.

These are Duraloy Shell Molded 180° Bends. And incidentally, several different alloying combinations of chrome iron and nickel are represented in these bends.

One of the outstanding values in shell molded castings is the higher precision or close tolerance casting . . . also usually less machining and finishing . . . than when pieces are cast statically. For quantity production it is usually more economical.

We suggest that you investigate shell molding for your high alloy casting requirements. It has much to offer and we have complete facilities for taking care of your requirements. Should other casting methods—static or centrifugal be better, we have these facilities, too.

The DURALOY Company
OFFICE AND PLANT: Scottdale, Pa.
EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

ments amounted to 58,257 tons, of which 56,573 were stainless and 1684 heat resisting.

In the first four months of this year, the movement totaled 145,665 tons (141,879 stainless and 3786 heat resisting), vs. 244,429 tons last year (237,660 stainless and 6769 heat resisting).

Slag Demand Heavy in '57

Despite a decline in home building and decreased cement production, demand for slag as a mineral aggregate remained high in 1957, reports the U. S. Bureau of Mines. Almost as much processed material was sold as in record 1956, output totaling 35 million tons, valued at a record $52 million.

Increases in highway construction partly offset declines in other building. The interstate highway program began to influence construction in some areas.

Screened air-cooled slag, the major product, decreased 1 per cent to 25,414,327 short tons, with a value of $40,202,524 (up 4 per cent). About 23 million tons, 92 per cent, were used for railroad ballast, or as aggregate in Portland cement concrete construction, bituminous construction of all types, and miscellaneous highway and airport construction. Mineral wool and roofing aggregates were other important uses.

Unscreened air-cooled slag totaled 2,166,678 tons valued at $1,408,412—increases of 3 and 10 per cent, compared with the 1956 figures. About 61 per cent went into highways and airports.

Output of granulated slag amounted to 4,318,485 short tons—a decrease of 7 per cent from the 1956 total. About 43 per cent was used in hydraulic cement, 45 per cent in constructing base and insulating courses for highways and as road fill, and the remainder for concrete block manufacture, agricultural and miscellaneous uses.

Expanded slag production dropped slightly from the 1956 record to 2,941,650 short tons valued at $8,434,807. The bulk went into lightweight concrete block.

Iron blast-furnace slag was produced in 15 states last year. Most of it was processed in Pennsylvania, Ohio, and Alabama. Ohio continued to lead in terms of value, Pennsylvania in tonnage.

Advertising Index

Aetna-Standard Engineering Co., The ..... Inside Back Cover
Aluminium Limited Sales, Inc. 145
American Brake Shoe Co., National Bearing Division 37
American Brass Co., The 97
American Chemical Paint Co. 110
American MonoRail Co., Landahl Conveyor Division 126
American Optical Co., Safety Products Division 90
American Welding & Mfg. Co., The 42
Aronson Machine Co. 122
Associated Spring Corporation 30

Barnes, Wallace, Co., The, Ltd., Division Associated Spring Corporation 30
Barnes, Wallace, Division, Associated Spring Corporation 30
Barnes, Wallace, Steel Division, Associated Spring Corporation 30
Bay State Abrasive Products Co. 104, 105
Bethlehem Steel Co. 1, 25, 26, 27, 28
B-G-R Division, Associated Spring Corporation 30
Blaw-Knox Co., Foundry & Mill Machinery Division 89
Bliss, E. W., Co., Mackintosh-Hemphill Division 17
Bristol Brass Corporation, The 40
Byers, A. M., Co. 75

Carpenter Steel Co., The, Alloy Tube Division 35
Chicago Steel Service Co. 117
Cincinnati Milling Machine Co., The 57
Colorado Fuel & Iron Corporation, The 48, 114, 115

Damascus Tube Co. 150
Detroit Steel Corporation 46
Dunbar Brothers Division, Associated Spring Corporation 30
Duraloy Co., The 148

Esso Standard Oil Co. 66
Euclid Crane & Hoist Co., The 140

Fairbanks, Morse & Co. 24

Garlock Packing Co., The 58
Gerlinger Carrier Co. 41
Gibson Division, Associated Spring Corporation 30

Handy & Harman 120
Hansen Manufacturing Co., The 124
Hassall, John, Inc. 68
Heald Machine Co., The ..... Inside Front Cover
Heppenstall Co. 70
Horsburgh & Scott Co., The 23

Jones & Lamson Machine Co. 62
Jones & Laughlin Steel Corporation 73, 125
Jones & Laughlin Steel Corporation, Strip Steel Division 118

Koppers Co., Inc. 38, 39

Landahl Conveyor Division, American MonoRail Co. 126
Landis Machine Co. 2
Linde Co., Division of Union Carbide Corporation 9
Link-Belt Co. 8

Mackintosh-Hemphill Division of E. W. Bliss Co. 17
Manross, F. N., & Sons Division, Associated Spring Corporation 30
Metal & Thermit Corporation 130
Michigan Tool Co. 102
Miller, Harry, Corporation 29
Milwaukee Division, Associated Spring Corporation 30
Morgan Construction Co. 65
Morse Twist Drill & Machine Co. 20, 21

National Bearing Division, American Brake Shoe Co. 37
Niagara Blower Co. 122

Ohio Crankshaft Co., The 3
Ohio Division, Associated Spring Corporation 30

Pangborn Corporation 11, 13
Philadelphia Gear Corporation 107
Pittsburgh Crushed Steel Co. 69
Pittsburgh Steel Co., Thomas Strip Division 108, 109
Production Machinery Corporation 78

Raymond Manufacturing Division, Associated Spring Corporation 30
Republic Steel Corporation 18, 19
Reynolds Metals Co. 14, 15
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 48
Ryerson, Joseph T., & Son, Inc. 45

Sciaky Bros., Inc. 36
Seaboard Pacific Division, Associated Spring Corporation 30
Selas Corporation of America 92, 93
Simonds Saw & Steel Co. 22
Surface Combustion Corporation 94, 95
Swindell-Dressler Corporation 100, 101

Thomas Strip Division, Pittsburgh Steel Co. 108, 109
Timken Roller Bearing Co., The ..... Back Cover
Towmotor Corporation 41

Union Carbide Corporation, Linde Division 9
United States Rubber Co., Mechanical Goods Division 87
United States Steel Corporation, Subsidiaries 112

Veeder-Root, Inc. 4

Wales Strippit Co. 12
Ward Steel Co. 69
Washington Steel Corporation 139
Westinghouse Electric Corporation 31, 32, 33, 34
Whitehead Metal Products Co., Inc. 10
Wickwire Spencer Steel Division, The Colorado Fuel & Iron Corporation 114, 115
Wilson, K. R., Inc., Hydraulics Division 123

Yoder Co., The 6
Youngstown Sheet & Tube Co., The 7

Table of Contents, Page 5

Classified Advertising, Page 147

VIGILANCE

The final victory over cancer will come from the research laboratory.

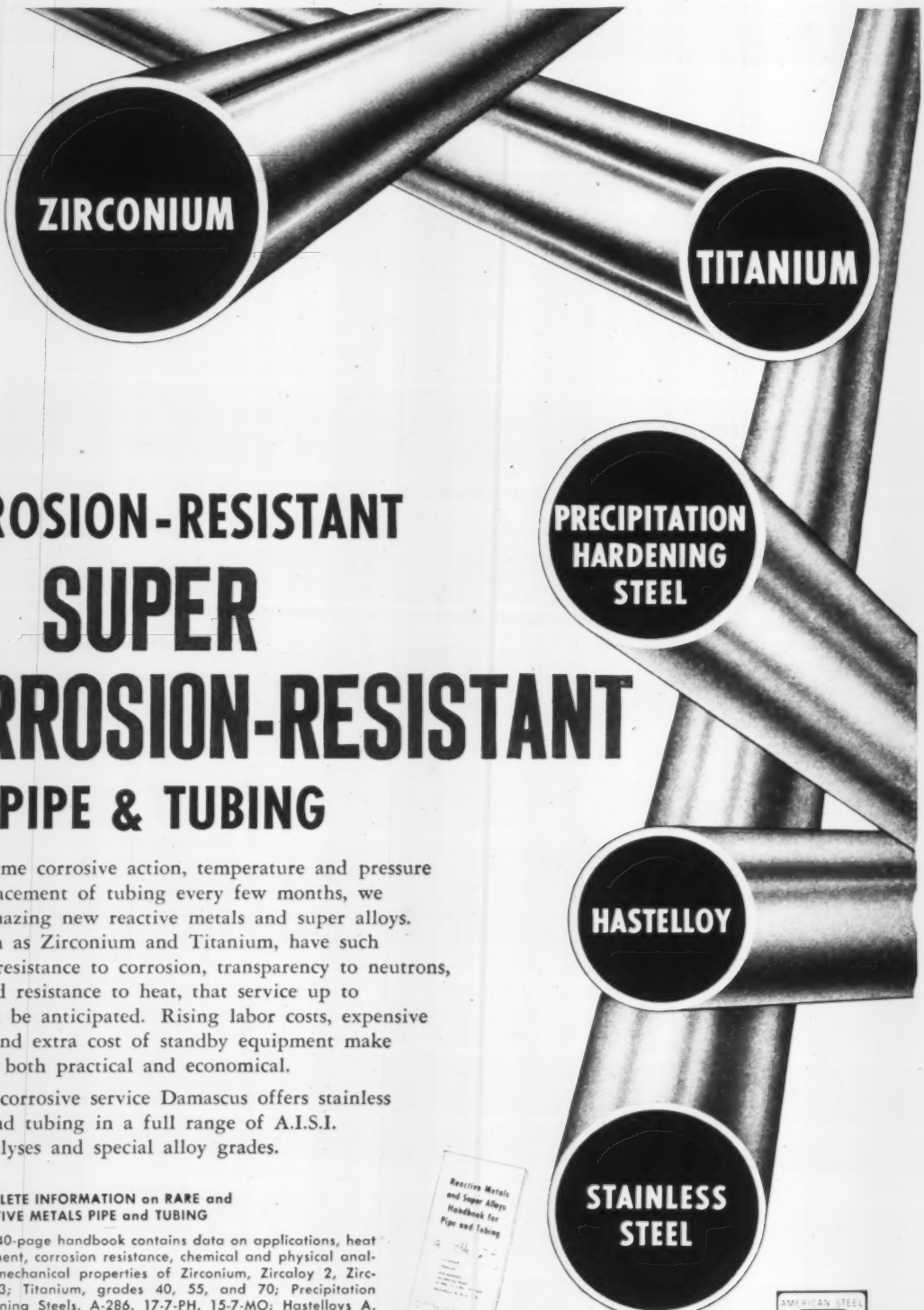
But there is a more immediate victory at hand today. Many cancers can be cured when detected early and treated promptly. *Vigilance* is the key to this victory.

There are certain signs which might mean cancer. Vigilance in heeding these danger signals could mean victory over cancer for you:

1. Unusual bleeding or discharge.
2. A lump or thickening in the breast or elsewhere.
3. A sore that does not heal.
4. Change in bowel or bladder habits.
5. Hoarseness or cough.
6. Indigestion or difficulty in swallowing.
7. Change in a wart or mole.

If your signal lasts longer than two weeks, go to your doctor to learn if it means cancer.

AMERICAN CANCER SOCIETY



CORROSION-RESISTANT and SUPER CORROSION-RESISTANT PIPE & TUBING

Where extreme corrosive action, temperature and pressure require replacement of tubing every few months, we offer the amazing new reactive metals and super alloys. Several, such as Zirconium and Titanium, have such remarkable resistance to corrosion, transparency to neutrons, strength, and resistance to heat, that service up to 20 years can be anticipated. Rising labor costs, expensive down-time and extra cost of standby equipment make these metals both practical and economical.

For general corrosive service Damascus offers stainless steel pipe and tubing in a full range of A.I.S.I. standard analyses and special alloy grades.

COMPLETE INFORMATION on RARE and REACTIVE METALS PIPE and TUBING

New 40-page handbook contains data on applications, heat treatment, corrosion resistance, chemical and physical analysis, mechanical properties of Zirconium, Zircaloy 2, Zircaloy 3; Titanium, grades 40, 55, and 70; Precipitation Hardening Steels, A-286, 17-7-PH, 15-7-MO; Hastelloys A, B, C, F, and X.

DAMASCUS TUBE COMPANY

STAINLESS STEEL TUBING AND PIPE

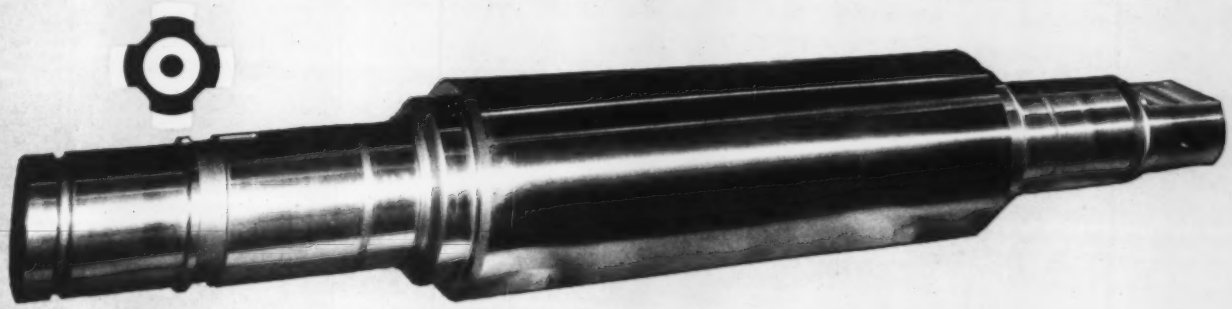
GREENVILLE, PENNSYLVANIA

AMERICAN STEEL WAREHOUSE ASS'N

FORMED STEEL TUBE INSTITUTE

MAGALOY (nodular iron) ROLLS

FROM 7" TO 42-1/2" DIAMETER



TYPICAL APPLICATIONS

MAGALOY GRADE "A"
(Sclerescope Hardness 30-38)
Piercing Mills

MAGALOY GRADE "B"
(Sclerescope Hardness 45-55)
Blooming Mills • Bar & Billet Mills–Roughers
Rod Mills–Roughers • Plug Mills (5½" and over)
Skelp Mills • Hot Sheet Bounce Mills

MAGALOY GRADE "C"
(Sclerescope Hardness 58-65)
Merchant Mills–Leaders and Finishers
Rod Mills–Intermediate Train • Hot Strip Mills
Cont. Bar & Billet Mills–Intermediate & Finishers
Plug Mills (up to 5½")
Tube Mills–Forming & Welding, Sizing, Reelers
Straightening • Skelp Mills • Edging Mills

MAGALOY GRADE "D"
(Sclerescope Hardness 66-70)
For applications requiring higher-than-average strength and hardness penetration.

• MUCH LESS BREAKAGE • BETTER SURFACE ON ROLLED MATERIAL • LOWER COST PER TON ROLLED • WEARING QUALITY OF GRAIN ROLLS • PHYSICALS EQUAL TO CAST STEEL • UNIFORM HARDNESS PENETRATION • SUPERIOR MACHINING PROPERTIES

A SPECIALIST AND A PIONEER IN NODULAR IRON

One of the first licensees (1951) for nodular iron, Aetna-Standard's foundry has built a reputation as a specialist in these rolls (trade name — Magaloy). In the making of nodular iron rolls, control of penetration is most important. So is the skill of the foundry to deliver the same uniformity of rolls order after order. As a pioneer and a specialist in nodular iron, Aetna's foundry has an excellent reputation among roll users and suppliers, particularly for penetration and uniformity of rolls.

AETNA • STANDARD

THE AETNA-STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CHILLED AND SAND IRON ROLLS • MOLY CHILLED IRON ROLLS • ASEX GRAIN ALLOY IRON ROLLS • ALANITE GRAIN, NICKEL CHILL (A-B-C-D) • RAIL FINISHING ROLLS • MAGALOY ROLLS • TUBE MILL ROLLS & RINGS

3 new applications get longer life and minimum maintenance using Dodge pillow blocks with Timken® bearings

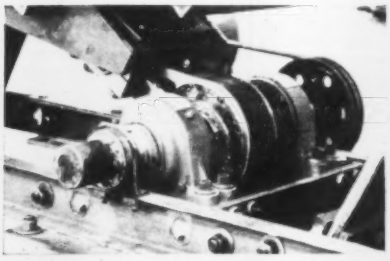
PICTURED below are three applications where Timken bearing equipped Dodge pillow blocks stay on the job with little attention under tough conditions. Their tapered design lets Timken bearings take *both* radial and thrust loads in any combination. And full-line contact between rollers and races provides extra load-carrying capacity. Wear is reduced, maintenance is cut to the minimum.

Cutaway view shows the Dodge All-Steel pillow block with Timken bearing mounting. Of special design, the bearing has a tapered bore with self-aligning spherical outer surface —never needs adjustment.

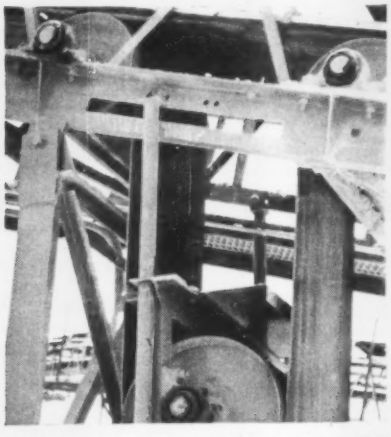
Besides the All-Steel pillow block, other versatile Dodge pillow blocks with Timken tapered roller bearings are: Type "E", Double-Interlock, Type "C" and Special Duty. All are compact in design. Special thrust devices that take up extra space are not needed.

So specify bearings trade-marked "TIMKEN" for the machines you buy or build. They bring Better-ness to any machine because Better-ness rolls on Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

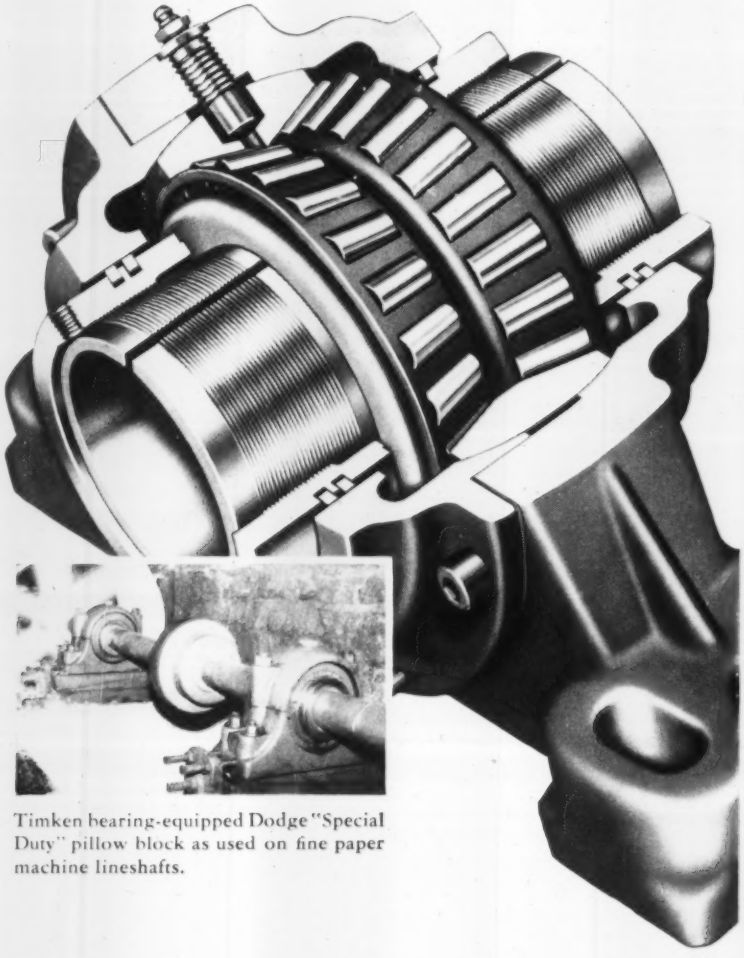
This symbol on a product means its bearings are the best.



Timken bearing-equipped Dodge All-Steel pillow block used in a vibrating conveyor.



Timken bearing-equipped Dodge Type "E" pillow block used in sand and gravel plant.



Timken bearing-equipped Dodge "Special Duty" pillow block as used on fine paper machine lineshafts.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD